Integrated Natural Resources Management Plan

U.S. Army Garrison,
Fort A.P. Hill

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INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

FORT A.P. HILL,
CAROLINE COUNTY & ESSEX COUNTY, VIRGINIA

This Integrated Natural Resources Management Plan (INRMP) has been developed by U.S. Army Garrison, Fort A.P. Hill in accordance with the requirements set forth in:

- 16 U.S.C 670 et seq: *The Sikes Act* and Amendments
- Department of Defense Instruction 4715.03 Natural Resources Conservation Program
- Army Regulation 200-1 Environmental Quality: Environmental Protection and Enhancement

The signatures below indicate plan approval and mutual agreement regarding the cooperative advance of a fully integrated ecosystem management-based Natural Resources Management Program.

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DEPARTMENT OF GAME AND INLAND FISHERIES

U.S. FISH AND WILDLIFE SERVICE

_____ Date _____
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FORT A.P. HILL

_____ Date _____
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Lieutenant Colonel, US Army
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Office of the Staff Judge Advocate (U.S. Army Environmental Command)
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INRMP Reviewers: U.S. Army Garrison, Fort A.P. Hill

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ANNUAL REVIEW AND COORDINATION OF THE INRMP

In accordance with The Sikes Act, as amended, Department of Defense Instruction 4715.03, and Army Regulation 200-1, this INRMP was reviewed and updated annually in coordination with the U.S. Fish and Wildlife Service and the Virginia Department of Game and Inland Fisheries. This coordination included a detailed description of Fort A.P. Hill's progress towards achieving the objectives stated in the INRMP.

2016

_____ Date _____

Terry L. Banks
Chief, Environmental & Natural Resources Division

2017

_____ Date _____

Terry L. Banks
Chief, Environmental & Natural Resources Division

2018

_____ Date _____

Terry L. Banks
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2019

_____ Date _____

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2020

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ACRONYMS AND ABBREVIATIONS

AAR	After Action Review
ACUB	Army Compatible Use Buffer
AERO	Army Environmental Reporting Online
AR	Army Regulation
ARA	Authorized Reimbursable Account
ASP	Ammunition Supply Point
ATV	All-terrain vehicle
AW	American Water O&M, Inc.
AWG	Asymmetric Warfare Group
BA	Basal area
BASH	Wildlife Aircraft Strike Hazard
Bdft	Board foot (or feet)
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practices
BOI	Business Operations and Integration
BRAC	Base Realignment and Closure
c.	Circa
CA	Cooperative Agreements
CBPA	Chesapeake Bay Preservation Act
CFI	Continuous Forest Inventory
CFM	Continuous Forest Monitoring
CLEO	Conservation Law Enforcement Officer
CLEP	Conservation Law Enforcement Program
CLS	Common Levels of Support
CLU	Common Land Unit
cm	Centimeter(s)
CMU	Conservation Management Unit
COR	Contracting Officer's Representative
CP	Component Plan
CUFT	Cubic foot (or feet)
CVWF	Central Vehicle Wash Facility
CWA	Clean Water Act
CWD	Chronic Wasting Disease
CZMA	Coastal Zone Management Act

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DBH	Diameter at breast height
DCR	Department of Conservation and Recreation
DEQ	Department of Environmental Quality
DES	Directorate of Emergency Services
DFC	Desired Future Conditions
DFMWR	Directorate of Family & Morale, Welfare and Recreation
DNH	Division of Natural Heritage
DOA	Declaration of Availability
DOD	Department of Defense
DODI	Department of Defense Instruction
DPTMS	Directorate of Plans, Training, Mobilization, and Security
DPW	Directorate of Public Works
EA	Environmental Assessment
EcoDSS	Ecosystem Decision Support System
EDRR	Early Detection/Rapid Response
EHD	Epizootic Hemorrhagic Disease
EISA	Energy Independence Security Act
EM	Emergency Management
EMS	Environmental Management Systems
ENRD	Environmental and Natural Resources Division
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPAS	Environmental Performance and Assessment System
EPCRA	Emergency Planning and Community Right-to-Know Act
EQCC	Environmental Quality Control Committee
ESA	Endangered Species Act
F&W	Fish and Wildlife
FAPH	Fort A.P. Hill
FIA	Forest Inventory and Analysis
FLETC	Federal Law Enforcement Training Center
FMU	Forest Management Units
FRA	Forest Reserve Account
FRI	Forest Resource Inventory
ft	Foot (or feet)
FY	Fiscal Year
g	Gram(s)

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GERB	Garrison Environmental Requirements Build
GIS	Geographic Information Systems
HUC	Hydrologic Unit Code
IBA	Important Bird Area
ICRMP	Integrated Cultural Resources Management Plan
IMCOM	Installation Management Command
in	Inch(es)
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
ISO	Installation Safety Office
ITAM	Integrated Training Area Management
IWFMP	Integrated Wildland Fire Management Plan
JIPOE	Joint Intelligence Preparation of the Operational Environment
JOA	Joint Operations Area
km	Kilometer(s)
KO	Contracting Officer
LCTA	Land Condition and Trend Analysis
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
LMPT	Land Management Police Training Program
LOS	Line-of-sight
LRAM	Land Rehabilitation and Maintenance
LSOG	Late-seral, Old-growth
LWX	Low water crossing
m	Meter(s)
MAPS	Monitor Avian Productivity and Survival
MBF	Thousand board feet
MBTA	Migratory Bird Treaty Act
MDEP	Management Decision and Execution Package
mi	Mile(s)
mi^2	Square mile(s)
MICC	Mission Installation Contracting Command
mm	Millimeter(s)
MOU	Memoranda of Understanding
msl	Mean sea level

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MTA	Maneuver Training Area
MWMA	Mattaponi Wildlife Management Area
NEPA	National Environmental Policy Act
NGOs	Non-Governmental Organizations
NJR	New Jersey rush
NLEB	Northern long-eared bat
NRSA	Natural Resource Site Assessment
NVCS	National Vegetation Classification System
NWCG	National Wildfire Coordination Group
NWI	National Wetlands Inventory
O&M	Operations and Maintenance
OP	Observation Point
ORV	Off-road motorized recreational vehicles
PAO	Public Affairs Office
PMO	Provost Marshal Office
POC	Point-of-contact
POL	Petroleum, Oil, and Lubricant
POST	Police Officer Standards and Training
PVC	Polyvinyl Chloride
QDM	Quality Deer Management
RAWS	Remote Automated Weather Station
RC	Range Complex
RCMP	Range Complex Master Plan
REC	Record of Environmental Consideration
ReVA	Regional Vulnerability Assessment
RFB	Riparian Forest Buffers
RFMSS	Range Facility Management Support System
RMO	Resource Management Office
ROA	Report of Availability
RPA	Resource Protection Area
RPPB	Real Property Planning Board
RPTS	Reimbursable Program Tracking System
RSA	Rappahannock spring amphipod
RTLA	Range and Training Land Assessments
SAF	Society pf American Foresters
SAR	Species-At-Risk

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SDWA	Safe Drinking Water Act
SEMS	Sustainable Environmental Management Systems
SERC	Smithsonian Environmental Research Center
SFI	Sustainable Forestry Initiative
SHARP	Sustainable Harvesting and Resource Professional
SHPO	State Historic Preservation Office
SJA	Staff Judge Advocate
SMZ	Streamside Management Zone
SNA	Special Natural Areas
SRA	Sustainable Range Awareness
SRP	Sustainable Range Program
SSP	Service Support Programs
SWM	Stormwater Management
SWP	Small whorled pogonia
SWPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
TES	Threatened or Endangered Species
TMDL	Total Maximum Daily Load
TRI	Training Requirements Integration
TSI	Timber Stand Improvement
UAS	Unmanned Aerial Systems
UR	University of Richmond
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Command
USD	Under Secretary of Defense
USDA	U.S. Department of Agriculture
P&R	Personnel and Readiness
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UTV	Utility Terrain Vehicle
UXO	Unexploded Ordnance
VCP	Virginia Coastal Zone Management Program
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VDOF	Virginia Department of Forestry

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VDOT	Virginia Department of Transportation
VPA	Virginia Pollution Abatement
VPDES	Virginia Pollution Discharge Elimination System
VSMP	Virginia Stormwater Management Program
WASH	Wildlife Aircraft Strike Hazard
WIA	Watershed Impact Assessment
WIVA	Watershed Inventory for Vulnerability Assessment
WMA	Wildlife Management Area
WMP	Water Management Plan
WNS	White nose syndrome
WSG	Warm Season Grasses
WWTP	Wilcox Wastewater Treatment Facility
YOY	Young of the Year

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PREFACE

Our Army, as a part of the Joint Force, is committed to providing relevant and ready land power capabilities to the Combatant Commanders. We train Soldiers, grow leaders, and forge them into cohesive units through tough, realistic training in a multitude of climates and conditions. Sustaining our diverse environmental resources is a critical component of maintaining Soldier readiness.

The Army will sustain its ranges so that they are always available to meet our mission requirements. The Army will sustain our test and training lands' natural resource base in quantity, quality, and configuration to meet current and future requirements. The Army will manage range activities to maintain the resiliency and buffering needed to protect the environment and the surrounding communities from impacts of training and testing.

We will apply an ecosystem-based approach to manage natural resources and will collaborate with stakeholders to protect ecosystems. We will be a leader in sustainability — this is crucial to the success of our mission as we meet current and future challenges.

- The Army Strategy for the Environment (2004)

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EXECUTIVE SUMMARY

Fort A.P. Hill (FAPH) is the largest military reservation in Virginia, with a large diversity of species and habitats. The purpose of this Integrated Natural Resources Management Plan (INRMP) is to provide interdisciplinary strategic guidance for the management of these natural resources. The primary objective of the Department of Defense's Natural Resources Conservation Program is to ensure continued access to land and airspace required to accomplish the military mission while maintaining these resources in a healthy and sustainable condition. To ensure that natural resources management and other mission activities are integrated and in agreement with federal and state laws, the INRMP is prepared in cooperation with the United States Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF).

FAPH is located primarily in Caroline County Virginia, with a small portion of its area (<1%) located in Essex County, Virginia. FAPH's mission as a Regional Training Center supports national readiness through realistic joint and combined arms training support to America's Defense Forces and contingency capability for the Mid-Atlantic and National Capital Regions. FAPH also supports numerous training activities involving ground troop maneuvers, air operations, amphibious operations, and special operations.

1.1 NATURAL RESOURCES PROGRAM MANAGEMENT

Although FAPH is responsible for the development of the INRMP, several state and federal agencies also played a critical role in the process. The INRMP reflects the mutual agreement of the USFWS and the VDGIF with regard to the conservation, protection, and management of fish and wildlife resources and of federally listed threatened and endangered (T&E) species. Agency comments are integrated into the INRMP, which ultimately is signed by the Garrison Commander, Regional Director of the USFWS, and the Director of the VDGIF. The signature of these agencies represents approval on those portions of the INRMP that are within the scope of their authority. FAPH's Environmental and Natural Resources Division (ENRD) maintains regular communications with the USFWS and VDGIF to address issues concerning INRMP implementation, including coordination of the annual review of the INRMP.

1.1.1 MANAGEMENT PHILOSOPHY

The principles of ecosystem management and biodiversity conservation serve as the foundation of the INRMP. The goal of ecosystem management is to conserve and enhance ecosystem integrity. Over the long term, this approach will maintain and improve the sustainability and biological diversity of terrestrial and aquatic ecosystems while supporting sustainable economies and communities in a manner that enables and enhances the military mission. The INRMP integrates all natural resources management programs and activities (e.g., forestry, fish & wildlife) in a way that sustains, promotes, and restores the health and integrity of FAPH biological communities and support FAPH's mission. The INRMP also serves an important role

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in support of the Range Complex Master Plan and Installation Master Plan. Comprehensive planning is used to identify and assess development alternatives and ensure compliance with applicable federal, state, and local laws, regulations, and policies. Information in the INRMP on the location and condition of natural resources is important to comprehensive planning. The INRMP also details natural resources management activities that may need to be considered during comprehensive planning efforts.

1.1.2 BIODIVERSITY CONSERVATION

The Department of Defense (DOD), conservation organizations, and the scientific community have recognized that the protection of biodiversity on military lands can only be accomplished using a broad, ecosystem approach. A need exists to integrate across ecological, economic, and cultural areas of concern. A successful ecosystem management approach occurs with the integration of all three concerns; focusing on only one concern is too narrow a perspective for management. At the foundation of ecosystem management is the conservation of biodiversity. Biodiversity is the variety of life and its processes; it includes communities and ecosystems in which they occur, and the ecological and evolutionary processes that keep them functioning. Key operational steps to the implementation of biodiversity conservation include:

a. An inventory of ecologically significant components of the landscape

b. Conservation planning in order to divide the landscape into manageable conservation units and to assess threats

c. Identification of uncertainties related to these units to be addressed through analysis and research

d. Monitoring of the effects of management operations to quantify success and identify unanticipated problems

e. Implementation of a decision support structure to ensure informed management decisions

f. Development of partnerships beyond FAPH's borders to improve conservation effectiveness

1.2 THREATENED AND ENDANGERED SPECIES

FAPH harbors a remarkable assemblage of biodiversity in the Coastal Plain of Virginia, second only to the Great Dismal Swamp. This is due primarily to the large size of the installation and its habitat quality and diversity, including numerous distinct natural community types ranging from wetlands to late seral old-growth forest types. Most of the habitat types found on FAPH are fire-maintained to some degree, meaning that they require periodic and sometime frequent controlled fire to maintain their natural composition and structure. This accounts for the exceptional habitat

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quality in the wooded portions of the installation adjacent to the range and impact areas. Four federally listed species are managed on FAPH, the Indiana bat (*Myotis sodalis*), the northern long-eared bat (*Myotis septentrionalis*), small whorled pogonia (*Isotria medeoloides*) and swamp pink (*Helonias bullata*). Two state-listed plant species, New Jersey Rush (*Juncus caesariensis*) and American ginseng (*Panax quinqifolia*) also occur on FAPH. The Rappahannock spring amphipod (*Stygobromus foliatus*), a ground-water dwelling crustacean, and two migratory birds; Bachman sparrow (*Peucaea aestivalis*), and the Rusty blackbird (*Euphagus carolinus*) are DOD Species-At-Risk have also been documented on the Installation.

1.2.1 LEGAL REQUIREMENTS TO MANAGE AND CONSERVE THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) of 1973 is the primary legal driver for the protection and management of federally listed T&E species. The ESA is intended to conserve the ecosystems upon which T&E species depend, and to provide a program for the conservation of such T&E species. Section 7 of the ESA outlines the obligations of federal agencies pertaining to the ESA, including the duties to conserve and refrain from jeopardizing species and their habitat. In preparation of a Biological Assessment, Section 7 requires agencies to determine if listed species are present within or in close proximity to an action area and if the action may potentially affect the listed species, even if the effect is deemed positive to the listed species.

1.2.2 MANAGEMENT OF THREATENED AND ENDANGERED SPECIES FOR MISSION SUPPORT

FAPH conducts a variety of both passive and active management activities to conserve and manage T&E species. Passive management consists primarily of general habitat management and protection. Active management consists of actions that are designed and tailored to a particular species such as species population monitoring, species-specific habitat management, and reintroduction or translocation of species. A combination of active and passive management is used to recover T&E species. Mission flexibility is increased when progress is made toward increasing populations of endangered species.

1.3 FISH AND WILDLIFE MANAGEMENT

FAPH manages its open areas to support habitat for a variety of game (e.g., white-tailed deer, turkey, waterfowl) and non-game (e.g., neotropical migratory birds) wildlife species. Approximately 500 acres of open space is managed specifically for wildlife habitat and thousands of additional open and forested acreage is managed to incorporate best management practices that are beneficial to wildlife.

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1.4 HUNTING, FISHING, AND TRAPPING

FAPH strives to promote and develop sustainable recreational opportunities, which include hunting, fishing, and trapping in a manner compatible with the military mission and subject to safety and security requirements. Local communities adjacent to FAPH have strong ties to recreational use of the lands that now comprise the installation; continuing to provide for such use fosters good public relations and is a valuable management tool to maintain sustainable populations of many species of wildlife. The State of Virginia owns and has jurisdiction over resident fish and wildlife throughout the state, including on FAPH. As such, the VDGIF establishes rules, regulations, and season dates governing the taking of resident fish and wildlife species statewide which FAPH implements subject to military mission requirements and safety considerations. FAPH also strives to provide quality and affordable outdoor recreational opportunities to installation-affiliated personnel and local communities for their benefit and enjoyment.

1.5 FOREST RESOURCES MANAGEMENT

The Forest Management Program at FAPH aims to maintain and improve the biological diversity and ecosystem health of forested habitats and support mission sustainability. FAPH uses sustainable forest management practices that are ecological in principle, economically sound, and treat the entire forest to improve the capabilities and flexibility of the military mission. FAPH's Forest Management Program is divided into four areas: 1) direct mission support, 2) timber management, 3) reforestation, and 4) wildland fire management. The Program provides direct mission support by providing expertise and information to mission planners on methods and impacts of various types of forest management activities. FAPH's Forestry Branch contracts merchantable timber to be cut from areas that interfere with military mission line-of-sight (LOS) or other capabilities and can manipulate forest structure in a specific area for a mission test or training need. As a part of timber management, forest managers develop and execute silvicultural prescriptions.

1.5.1 WILDLAND FIRE MANAGEMENT

The Wildland Fire Management Program (WFMP) at FAPH consists of three interrelated components: 1) direct mission support, 2) prescribed fire, and 3) wildfire management. Mission support, ecosystem management, and protection of life and property all depend on a professionally managed WFMP. FAPH has fire dependent vegetation community types with frequent occurrences of wildfire due to the incendiary nature of military munitions.
Due to smoke management constraints, mission requirements, adjacent municipalities, and natural communities prone to periodic burning from natural and anthropogenic sources, FAPH manages a challenging WFMP. FAPH maintains an annual prescribed fire goal of at least 30,000 acres per year (approximately). The high number of mission-caused fires puts it among the most wildfire-prone areas in the region. FAPH is continually incorporating new information into its decision making in order to improve the efficiency, safety, and quality of this program.

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1.6 INTEGRATED PEST MANAGEMENT PROGRAM

FAPH Integrated Pest Management Program is the overarching umbrella program that addresses management and control of invasive plant and / or animal species and nuisance wildlife and vegetation that may cause negative environmental impacts to FAPH's biological communities, real property, and / or native habitats and species. The primary goal of invasive species management is to protect the integrity of natural ecosystems by reducing and controlling the spread of non-native invasive species. Efforts to control invasive non-native plants focus on identifying problem sites, mapping locations, and conducting mechanical and/or chemical control. All invasive species control activities are conducted in accordance with FAPH's Integrated Pest Management Plan (Appendix I).

1.6.1 NUISANCE WILDLIFE

The Fish and Wildlife Office is responsible for responding to nuisance and injured wildlife reports on FAPH. Nuisance wildlife on FAPH typically includes birds, snakes, beavers, foxes, raccoons, and opossums. Injured wildlife reports include a variety of birds with broken wings or other injuries, injured foxes, coyotes, raccoons, opossums, deer, and squirrels. Fish and Wildlife personnel have the necessary experience, training, equipment, permits, and rapport with governing agencies such as the VDGIF and the USFWS.

1.6.2 WILDLIFE AIRCRAFT STRIKE HAZARD (WASH)

Wildlife have the potential to cause millions of dollars in damage to aircraft and the loss of human life of the crew and passengers. FAPH implements a WASH plan designed to deter wildlife from airfields to ensure the life, health, and safety of the aviators and ensure that FAPH is able to provide optimal training facilities.

1.7 WATERSHED MANAGEMENT / CHESAPEAKE BAY PRESERVATION

Located within the Chesapeake Bay, FAPH implements management practices to ensure its activities do not negatively impact water quality of the Chesapeake Bay which is already highly degraded. Management practices utilized by FAPH in support of federal efforts to restore the Chesapeake Bay include the establishment and maintenance of 100-foot vegetative buffers around all streams and wetlands, implementation of Low Impact Development features in construction / renovation projects, retrofitting existing stormwater conveyances to increase filtration of stromwater runoff, thereby decreasing pollutant discharge into waterways, and siting new facilities away from streams and wetlands.

1.8 PUBLIC OUTREACH

Public outreach is a critical component of any natural resource management agency. Without the support of partner organizations and local citizens, many management programs cannot succeed.

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Given these facts, the goal of public outreach efforts is to encourage understanding of, support for, and involvement in the many management and monitoring programs at FAPH. Outreach is typically accomplished through 1) research partnerships and internships, 2) presentations and guided tours, 3) volunteer involvement and 4) sponsoring environmental events (e.g., Earth Day).

1.9 CONSERVATION VOLUNTEER PROGRAM

Conservation volunteers can provide valuable support to FAPH's natural resources management program. Community involvement with this program increases public understanding of the work and planning considerations behind management decisions, and thus increases public support. Volunteers can accomplish projects that might otherwise not be attempted due to lack of personnel and funding. Volunteers can provide skills or expertise needed only on a temporary basis. Volunteers can be utilized in all areas of Natural Resources Management, except fighting wildfires and conducting conservation law enforcement.

1.10 INRMP COMPONENT PLANS

Several chapters of this INRMP each constitute a Component Plan(s) for a particular natural resources related program area. Each plan identifies how it supports the overall goals and objectives of this INRMP in accordance with all applicable statutory and regulatory authorities, an operational description, actions and projects required to meet the intent of this INRMP, and approximate timeframes for implementation. Component plans contained within this INRMP include:

Chapter 7: Forest Management

Chapter 8: Fish & Wildlife Management

Chapter 9: Endangered Species Management

Chapter 10: Invasive Species Management

Chapter 11: Agricultural Outlease

Chapter 12: Watershed Management

Chapter 13: Grounds Maintenance

Chapter 14: Integrated Training Area Management

Chapter 15: Outdoor Recreation

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1.11 ANNUAL COORDINATION REQUIREMENTS

Natural resource management is a dynamic process and, as such, management plans often require frequent reviews and updates. Annual reviews and updates are required to keep the CP current. Following completion of the INRMP, FAPH shall conduct annual reviews and updates to account for changes in the military mission, condition of natural resources, the ecosystem, and regulatory requirements. Annual coordination with the USFWS and VDGIF shall occur to produce feedback from those agencies, which will then be incorporated into the annual update process. FAPH's ENRD will present the findings from this annual review to update the Garrison Commander on the status and effectiveness of the plan.

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1.0 GENERAL INFORMATION

1.1 PURPOSE

Comprising nearly 76,000 acres, Fort A.P. Hill (FAPH) is the largest military installation in Virginia, the largest Army installation in the Mid-Atlantic Region, and the 6th largest military installation in the eastern United States encompassing and sustaining a large diversity of species and habitats. The purpose of this Integrated Natural Resources Management Plan (INRMP) is to provide an interdisciplinary strategic plan to guide the management of natural resources to support the military mission of FAPH for the period 2016-2020.

It is the policy of the U.S. Army to:

a. Comply with all applicable federal, state, and local regulations pertaining to natural resources management

b. Manage/enhance natural resources to maintain mission readiness, conserve biodiversity, and maintain ecosystem services

c. Integrate the management of natural resources across functional areas to ensure management goals serve/consider multiple purposes, to ensure compliance, and to optimize the utilization of available resources

d. Partner with external agencies and organizations to conserve and manage lands outside Army installations in a manner that is compatible with environmental requirements to eliminate or relieve current or anticipated encroachment pressures

e. Maintain, protect, and improve environmental quality, aesthetic values, and ecological relationships

This INRMP addresses all natural resources-related management activities that occur on FAPH with detailed information provided on Forest Management, Fish & Wildlife Management, Threatened and Endangered Species Management, and Watershed Management. This INRMP is prepared in cooperation with the U.S. Fish & Wildlife Service (USFWS), the Virginia Department of Game & Inland Fisheries (VDGIF), and other pertinent groups and agencies to ensure that natural resources management and other mission activities are integrated and in agreement with federal requirements and interests. FAPH maintains communication with these groups and agencies throughout the year as necessary to collaborate on management decisions.

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1.2 AUTHORITY

This INRMP was developed to meet the requirements of i) the Sikes Act (16 United States Code [U.S.C.] 670 *et seq*.), *as amended*; ii) Department of Defense Instruction (DODI) 4715.03, *Natural Resources Conservation Program*; and iii) Army Regulation (AR) 200-1, *Environmental Quality (Environmental Protection and Enhancement)*. The Sikes Act directs that, "Consistent with the use of military installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments shall carry out the program required by this subsection to provide for:

a. The conservation and rehabilitation of natural resources on military installations

b. The sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and other consumptive or non-consumptive uses

c. Public access to the installation to facilitate recreational use of natural resources, subject to safety requirements and military security"

Accordingly, this INRMP shall, to the extent appropriate and applicable, provide for the following:

a. No net loss in the capability of installation lands to meet military mission requirements

b. A conservation benefit to all federally listed species to preclude Critical Habitat designation

c. Forest management, Fish & wildlife management, Land management, Outdoor recreation, and overall environmental management

d. Wetlands conservation and enhancement

e. Integration of and consistency among, the various activities conducted under the INRMP

f. Establishment of the specific natural resource management goals and objectives and time frames for the proposed actions

g. Sustainable use of natural resources by the public as consistent with the mission and natural resource requirements

h. Public access to the installation subject to military mission requirements, safety, and military security

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i. Enforcement of applicable natural resources laws and regulations
j. Such other activities as the secretary of the military department determines appropriate

DODI 4715.03 is the overarching instruction for Department of Defense (DOD) natural resource management, and is the primary agent for implementing policy (including the Sikes Act), assigning responsibilities, and prescribing procedures for the integrated management of natural and cultural resources on DOD property. This Instruction also establishes the DOD Conservation Committee that reports to the Environmental Safety and Occupational Health Policy Board, and designates "DOD Executive Agents" to lead DOD implementation of primary conservation issues.

AR 200-1 establishes policies to: responsibly manage natural and cultural resources on Army installations, clean up past environmental damage, meet current environmental standards, plan future activities to minimize impacts, and eliminate pollution from Army activities whenever possible. AR 200-1 directs installations to comply with all federal, state, and local laws and regulations pursuant to environmental management, provides instruction to manage natural resources on Army installations, and directs installations to pursue adequate funding to meet environmental legal obligations.

The INRMP for FAPH facilitates compliance with federal, state, and local environmental requirements. These requirements deal with analysis of potential environmental impacts, water and air quality, wetlands, threatened and endangered species, migratory birds, other wildlife, forest and fire management, and public access and recreation. The relevant statutes and executive orders are listed in Appendix A and are referenced in each component plan, as applicable.

1.3 OVERVIEW

1.3.1 SCOPE

This INRMP is a revision of FAPH's previous INRMP (FY09-13). The update provides contextual analysis for the role of FAPH in training America's Defense Forces and in providing contingency capability for the Mid-Atlantic and National Capital regions, addresses management of the existing natural resources, identifies the long-term natural resources management perspective, and identifies projects and activities necessary to sustainably manage natural resources in a manner that maintains and enhances FAPH's military readiness. FAPH is largely undeveloped with significant natural resources present as forests, open areas, wetlands, and wildlife. This abundance of natural resources requires active management to ensure soldiers have access to training environments required for their missions as well as recreational opportunities. FAPH's natural resources management strategies are designed to concurrently support military land use and the sustainable conservation of species and habitat. This approach to natural resources management is accomplished thru cross-functional integration and coordination with several installation offices to fully optimize the utilization of onsite technologies, equipment, and expertise as through coordination with federal and state agencies, as appropriate.

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This INRMP also addresses Community Outreach and the use of Geographic Information Systems (GIS) as a powerful planning and management tool used to meet natural resources management objectives. The operational scope of this INRMP covers the 75,794 contiguous acres within Caroline (99.97%) and Essex Counties (0.03%), Virginia that comprise FAPH and a small river-front parcel (25 acres) in Caroline County, Virginia ("Hicks Landing") that is leased from a private citizen in support of amphibious training operations. Implementation of this plan applies to organizations both internal and external to FAPH that have the potential to influence FAPH natural resources.

1.3.2 RESPONSIBLE PARTIES

Multiple installation entities play a role in managing, protecting, and supporting FAPH's natural resources management program to ensure FAPH's military training mission and natural resource conservation mission are compatible and mutually supportive. The following installation directorates, offices, tenant organizations, and third parties are involved in the stewardship of installation natural resources:

1.3.2.1 INSTALLATION AGENCIES AND OFFICES

1.3.2.1.1 GARRISON COMMANDER

The U.S. Army Garrison Commander is responsible for the overall management of installation facilities and resources; compliance with all applicable federal, state, and local environmental laws and regulations; and for the implementation and enforcement of this INRMP.

1.3.2.1.2 DIRECTORATE OF PUBLIC WORKS

The Directorate of Public Works (DPW) manages real property, natural resources, environmental protection and pollution abatement programs, coordinates master planning, engineering, construction, operation, and maintenance of buildings, structures, grounds, and utilities. DPW's divisions include Environmental and Natural Resources (ENRD), Business Operations and Integration (BOI), Master Planning, Engineering, Operations and Maintenance (O&M), and Housing.

ENRD is responsible for land management and implementing all natural and cultural resource programs in fulfillment of this INRMP while providing biological, scientific, and technical contributions towards Outdoor Recreation programs and initiatives. The Installation Forester is the Prescribed Burn Manager for FAPH. The Installation Wildlife Biologist is the Integrated Pest Management Coordinator for FAPH. ENRD's Compliance Branch ensures all individuals, organizations, agencies, and entities on FAPH comply with all applicable federal, state, and local environmental laws and regulations.

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DPW O&M Division is responsible for improved grounds maintenance and the maintenance / replacement of water crossings (e.g. culverts and low water crossings).

The DPW Director is the proponent for noxious weeds and invasive species management.

1.3.2.1.3 DIRECTORATE OF PLANS, TRAINING, MOBILIZATION & SECURITY, RANGE OPERATIONS DIVISION

The Directorate of Plans, Training, Mobilization, and Security (DPTMS) is responsible for planning, operations, force modernization, mobilization activities, and reviewing, coordinating, and the scheduling of all military training activities that occur on FAPH. DPTMS has overall responsibility for the Integrated Training Area Management (ITAM) program, which integrates the mission requirements derived from RTLP with environmental (i.e., statutory) requirements and environmental management practices and establishes the policies and procedures to achieve optimum, sustainable use of training and testing lands.

1.3.2.1.4 DIRECTORATE OF EMERGENCY SERVICES

The Directorate of Emergency Services (DES) is responsible for providing police support, fire protection, physical security, traffic control, and maintenance of law and order. The Provost Marshal Office (PMO) is also responsible for enforcing all conservation law enforcement on the installation with support of federal and state agencies. The Fire Department, in coordination with DPW-Forestry, is responsible for wildfire suppression and supports prescribed burning activities on the installation.

1.3.2.1.5 DIRECTORATE OF FAMILY AND MORALE, WELFARE AND RECREATION

The DFMWR is responsible for recreational activities that occur on FAPH excluding dispersed natural-resources related activities (e.g., hunting, fishing). Dispersed natural-resources related activities are administered and managed by the DPW-ENRD (Fish & Wildlife Branch). DFMWR oversees the use of cabins, lodges, campgrounds, ball fields and other miscellaneous organized recreation facilities not strictly defined as "outdoor recreation associated with natural resources."

1.3.2.1.6 PUBLIC AFFAIRS OFFICE

The Public Affairs Office (PAO) is responsible for formulating, implementing, and disseminating all command information to the public, including information about natural resources management.

1.3.2.1.7 RESOURCE MANAGEMENT OFFICE

The Resource Management Office (RMO) is responsible for budgeting (which includes

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the preparation of the consolidated budget) and coordinating financial management, program management, program evaluation, and information management.

1.3.2.1.8 MISSION INSTALLATION CONTRACTING COMMAND (MICC)

The MICC performs contracting functions in accordance with the Federal Acquisition Regulation, Defense Federal Acquisition Regulation, Army Federal Acquisition Regulation, and Installation Management Command regulations.

1.3.2.1.9. INSTALLATION SAFETY OFFICE

The Installation Safety Office (ISO) establishes guidelines, procedures, and programmatic review for the effective implementation of DOD and contractor worker safety in accordance with federal, local, and Army regulations.

1.3.2.1.10 OFFICE OF THE STAFF JUDGE ADVOCATE

The Office of the Staff Judge Advocate (OSJA) provides legal advice to the Command in all areas of law, including compliance with applicable environmental and natural resource management laws and regulations. The SJA provides advice concerning the statutory and policy framework in which this INRMP is implemented. It is the SJA's responsibility to ensure that all violations of federal, Commonwealth of Virginia, and local fish and wildlife regulations are investigated and prosecuted as appropriate. The SJA is also involved in enforcement actions, legal interpretation, development of Memoranda of Understanding (MOU) and Cooperative Agreements (CA), and other legal reviews as appropriate.

1.3.2.2 TENANT ORGANIZATIONS

In addition to the FAPH Directorates and Offices identified above, successful implementation of this INRMP requires coordination and assistance from other organizations with a permanent presence on FAPH (i.e. Tenant Units).

1.3.3 THIRD PARTIES

Successful implementation of this INRMP also requires coordination and assistance from entities/individuals that possess a variety of lease agreements with FAPH, specifically:

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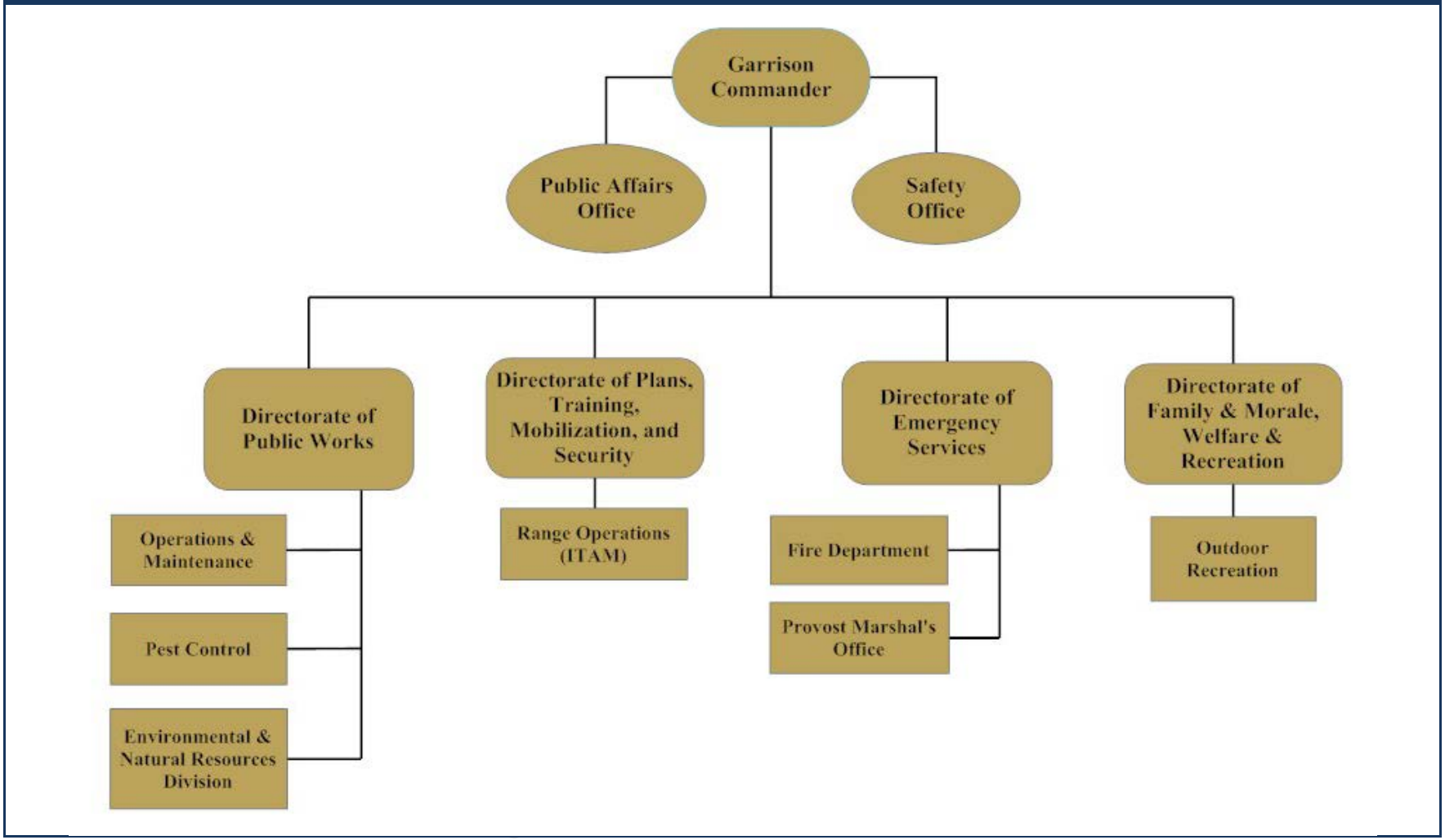
Figure 1-1. Extract of FAPH's Organizational Structure as it pertains to the implementation of this INRMP



1.3.3.1 UTILITIES

The Rappahannock Electric Cooperative maintains land on FAPH under a lease agreement for electrical transmission corridors. Maintenance activities associated with these corridors include mechanical and chemical vegetation control. Vegetation management conducted within these corridors shall be consistent with this INRMP and all applicable federal, state, and local laws and regulations.

American Water O&M maintains land under a lease agreement for water and wastewater lines. Maintenance activities associated with these corridors include mechanical and chemical vegetation control. Vegetation management conducted within these corridors shall be consistent with this INRMP and all applicable federal, state, and local laws and regulations.

1.3.3.2 TRANSPORTATION

The Virginia Department of Transportation (VDOT) maintains land on FAPH under a lease agreement for transportation corridors for portions of U.S. Route 301 and U.S. Route 17. Maintenance activities associated with these corridors include mechanical and chemical vegetation control. Vegetation management conducted within these corridors shall be consistent with this INRMP and all applicable federal, state, and local laws and regulations. Archeological resources located within the easements are collaboratively managed between VDOT and FAPH.

1.3.3.3 AGRICULTURAL

A private citizen currently maintains 162 acres of land on FAPH under an agricultural lease agreement. Maintenance activities associated with this lease include mowing, disking, herbicide application, crop planting, and crop harvesting.

1.3.4 EXTERNAL STAKEHOLDERS

The following organizations have an interest or a regulatory role in the management of natural resources on FAPH:

1.3.4.1 FEDERAL AGENCIES

1.3.4.1.1 UNITED STATES FISH AND WILDLIFE SERVICE

The USFWS is a signatory cooperator in the implementation of this plan in accordance with the Sikes Act. Major cooperative efforts with the USFWS involve threatened and endangered species conservation / management, bald eagle management, and migratory bird management on the installation. The USFWS also manages the Rappahannock River Valley National Wildlife Refuge (RRVNWR) located along the Rappahannock River adjacent to the installation. This refuge is biologically diverse comprising 12 habitat types and four unique natural plant

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community types along the shores of the Rappahannock River that support more than 14 avian species at risk, one federally threatened plant species, one state threatened plant species, and seven state rare plant species. The lower Rappahannock River is a known important bald eagle concentration area for eastern breeding populations, especially for overwintering eagles. The Rappahannock River is also historic spawning grounds for the federally listed Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*).

USFWS determinations, resource considerations, and technical requirements for species management arising from annual INRMP coordination, interagency consultation, recurring collaboration on Installation projects, programs, and activities, provided the substantive technical content to cooperatively develop this revised INRMP.

1.3.4.1.2 ENVIRONMENTAL PROTECTION AGENCY

The United States Environmental Protection Agency (EPA) is the federal regulatory agency responsible for ensuring compliance with the main body of Federal environmental law and regulations. EPA has delegated program authority for many environmental programs to the Virginia Department of Environmental Quality.

1.3.4.1.3 U.S. ARMY CORPS OF ENGINEERS

The U.S. Army Corps of Engineers (USACE), through various field offices, offers technical and contracting capabilities in the conservation and management of natural resources in fulfillment of this INRMP. The USACE Norfolk District Office exercise regulatory authority over the management of streams and wetlands on FAPH and is responsible for administering timber sale contracts conducted on the installation.

1.3.4.1.4 SMITHSONIAN INSTITUTION

The Smithsonian Institution (SI) is a group of museums and research centers administered by the United States government. Researchers from the SI have conducted field research on FAPH over the past several years on endangered and / or rare species. FAPH and the SI have a Memorandum of Agreement pertaining to life history research for the federally threatened small whorled pogonia (*Isotria medeoloides*).

1.3.4.2 STATE AGENCIES

1.3.4.2.1 VIRGINIA DEPARTMENT OF GAME & INLAND FISHERIES

The VDGIF is a signatory cooperator in the implementation of this plan in accordance with the Sikes Act. The agency is the primary contact for state-listed animal species on the installation. FAPH and VDGIF have a Memorandum of Understanding pertaining to conservation law enforcement. The agency provides frequent cooperative technical assistance regarding wildlife

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management, hunting / game check operations, habitat management planning and implementation.

VDGIF's resource considerations and technical requirements arising from annual INRMP coordination, interagency collaboration, recurring engagement on Installation projects, programs, and activities, provided the substantive technical content to cooperatively develop this revised INRMP.

1.3.4.2.2 VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

The Virginia Department of Environmental Quality (VDEQ) administers state and federal laws and regulations for air quality, water quality, water supply, and land protection. In addition, other programs cover a variety of environmental activities, such as improving the ability of businesses and local governments to protect the environment, and offering technical and financial assistance for air and water quality improvements. The VDEQ issues permits, conducts inspections and monitoring, and enforces regulations and permits.

1.3.4.2.3 VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

The Virginia Department of Agriculture and Consumer Services is the state agency responsible for oversight of laws regulations relating to consumer protection and the promotion of agriculture. It has legal authority to enforce state laws pertaining pesticide application, state-listed plants and insect species.

1.3.4.2.4 VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION

The Virginia Department of Conservation and Recreation (VDCR) is the state agency responsible for the conservation, protection, enhancement, and wise use of the Commonwealth's unique natural, historical, recreational, scenic, and cultural resources. The VDCR, Division of Natural Heritage (DNH) is responsible for inventorying, monitoring, and documenting state and federally-listed species occurring within the Commonwealth. This agency is the primary contact for state-listed plant species on the installation.

1.3.4.2.5 VIRGINIA DEPARTMENT OF FORESTRY

The Virginia Department of Forestry (VDOF) is the state agency responsible for forest management of state-owned lands and also supports private forest land owners with technical information and services. VDOF has resources to offer support to the installation during wildfire suppression. The abundance and diversity of forest habitat types on the installation contribute to regional forest diversity and continuity while also providing wood products for local industry as a renewable resource.

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1.3.4.2.6 VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

The Virginia Department of Historic Resources is the State Historic Preservation Office (SHPO) with a mission to foster, encourage, and support the stewardship of Virginia's significant historical architectural, archaeological, and cultural resources.

1.3.4.2.7. VIRGINIA OUTDOORS FOUNDATION

The Virginia Outdoors Foundation is a state agency, established to promote the preservation of open-space lands and to encourage private gifts of money, securities, land or other property in order to preserve the natural, scenic, historic, scientific, open-space and recreational areas of the Commonwealth. The Virginia Outdoors Foundation is a strong conservation partner with FAPH to minimize incompatible development proximal to FAPH. The Virginia Outdoors Foundation is the primary holder, monitor, and enforcer of conservation easements in the Commonwealth of Virginia.

1.3.4.3 COUNTY AGENCIES

1.3.4.3.1 CAROLINE COUNTY MUNICIPALITY

FAPH covers approximately 22% of Caroline County and is located between the incorporated towns of Bowling Green (County Seat) and Port Royal. County planners, departments, agencies, and the local citizenry have an interest in FAPH military operations and natural resource management activities due to the proximity of the installation to their respective jurisdictions and the long history of association for recreational purposes and familial connections. Caroline County is also the beneficiary of revenues (40% of annual profits) generated from timbersale contracts

1.3.4.3.2 HANOVER-CAROLINE COUNTY SOIL AND WATER CONSERVATION DISTRICT

The Hanover-Caroline County Soil and Water Conservation District's mission is to provide and promote leadership in the conservation of natural resources through proper stewardship and educational programs. The Hanover-Caroline County Soil and Water Conservation District administers programs to reach agricultural producers, suburban home owners, and school children to education them on the importance of conservation of natural resources. One of its major goals is to administer the state Best Management Practice (BMP) Cost-Share Program. This program gives agricultural producers incentives to install conservation practices that will help protect soil and water quality. The Hanover-Caroline County Soil and Water Conservation District is a leader in the state in natural resources education, providing critical outreach to the public.

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1.3.4.4 OTHER ORGANIZATIONS

1.3.4.4.1 PEUMANSEND CREEK REGIONAL JAIL

The Peumansend Creek Regional Jail is a medium and minimum security, direct-supervision facility immediately surrounded by FAPH and operated by the Peumansend Creek Regional Jail Authority.

1.3.4.4.2 NATIVE AMERICANS

The Rappahannock Tribe is a state-recognized Native American tribe with historic ties to the surrounding landscape inclusive of FAPH. There are no federally recognized Native American tribes that have expressed a cultural or historical affiliation with Installation lands. There have not been any Native American cultural resource sites (or resources) of Tribal religious importance identified, nor any identified as important to the continuance of any federally recognized Native American Tribe's culture.

1.3.4.5 NON-GOVERNMENTAL ORGANIZATIONS

1.3.4.5.1 LAND CONSERVATION

Several Non-Governmental Organizations with a land protection / conservation mission partner or collaborate with FAPH in its efforts to permanently preserve undeveloped lands surrounding the installation to prevent incompatible development that can impact military readiness. These organizations include:

a. The Conservation Fund

b. The Trust For Public Land

c. The Nature Conservancy

d. The Northern Neck Land Conservancy

The Rappahannock River Land Protection Partnership consists of these organizations operating in partnership with FAPH, The Virginia Outdoors Foundation, and the USFWS RRVNWR.

1.3.4.5.2 CULTURAL RESOURCES PROTECTION

Several non-governmental organizations collaborate and partner with FAPH to identify and protect cultural resources occurring on FAPH. These organizations include:

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a. Caroline County Historical Society

b. Historic Port Royal

c. The Archeological Society of Virginia

d. The Surratt Society

1.3.5 INTEGRATION WITH OTHER INSTALLATION PLANS

This INRMP integrates natural resources management with existing installation management plans in order to: accomplish stated goals, eliminate redundancies, preclude counter-effective efforts, and optimize the use of limited resources. The following installation-level plans were reviewed, and are consistent with the information presented in this INRMP:

a. Integrated Cultural Resources Management Plan (Appendix D)

b. Integrated Wildland Fire Management Plan (Appendix E)

c. Watershed Management Plan (Appendix H)

d. Integrated Pest Management Plan (Appendix I)

e. Nutrient Management Plan

f. Range Complex Master Plan

g. Installation Strategic Action Plan

h. Mineral Lease Management Plan

i. Installation Master Plan

1.4 NATURAL RESOURCES MANAGEMENT PARADIGM

FAPH's natural resources management mission is to enhance the military mission and conserve biodiversity through the scientific application of ecosystem management principles. This is accomplished by:

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a. Evaluating, managing, and monitoring the condition and development of resources for resource sustainability within an ecosystem management context (state and region-wide perspective)

b. Enable and enhance military training opportunities by increasing the accessibility and availability training lands through sound natural resources management requirements for use of land and water training areas

c. Leverage partnerships with federal, state, and local organizations and agencies

d. Implement adaptive management practices to be a "learning" management organization

e. Operate as a cross-functional team to leverage a diversity of expertise and perspectives

1.4.1 ECOSYSTEM MANAGEMENT

The principles of ecosystem management and biodiversity conservation serve as the foundation of the INRMP. AR 200-1 requires an integrated approach to natural resources management and lays a framework for documenting and maintaining natural resources programs. Integrated ecosystem management is sound stewardship and will, over the long-term, ensure a maximum return of ecosystem goods and services at minimum cost to the public. Per DODI 4715.03, the DOD's goals of ecosystem management are to preserve and enhance ecosystem integrity, improve sustainability, and support sustainable economies. In applying the principles and guidelines for ecosystem management, FAPH will:

a. Maintain or restore the sustainability and biological diversity of native ecosystems where practical and consistent with the military mission

b. Maintain or restore ecological processes such as fire and other disturbance regimes where practical and consistent with the military mission

c. Maintain or restore hydrological processes in streams, floodplains, and wetlands at the watershed-level when practical and consistent with the military mission

d. Support sustainable recreational and/or consumptive anthropogenic activities, such as outdoor recreation and commercial timber harvesting, in a manner that maintains or enhances the mission and within the parameters of healthy and diverse ecosystems

e. Collaborate with other DOD components, pertinent agencies, and adjacent landowners to implement ecosystem management on the installation.

1.4.2 SUSTAINABLE ENVIRONMENTAL MANAGEMENT SYSTEMS (SEMS)

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In accordance with Executive Orders, and DOD / Army policies, natural resources management and administration are integrated into FAPH's Sustainable Environmental Management Systems (SEMS). SEMS is the overall programmatic process that focuses on sustainability while focusing on critical aspects of major activities and operations. FAPH SEMS policy:

a. Integrates sound environmental practices into all operations and business decisions; continued commitment to integrating sustainability into our day-to-day business and all decisions across the organization pertaining to design, investments, and prioritization of activities and stewardship of resources.

b. Utilizes Cross Functional Teams of multi-directorate representation to provide sustainability-based input to the Installation Strategic Plan and develop initiatives that accomplish strategic goals, and coordinate DOD and Army and sustainability long-term goals and short-term objectives.

c. Promote Installation Management Command (IMCOM) sustainability principles (mission excellence, community collaboration, environmental stewardship, economic benefit, and systems thinking).

d. Continually assess activities, products and services to determine their effect on the environment; identify the significant environmental impacts and ensure that they are considered when establishing our objectives and targets in our environmental management programs.

e. Ensure implementation of green procurement initiatives, pollution prevention measures, and waste minimization programs.

f. Establish quantifiable goals for environmental performance.

g. Conduct regular management reviews to continually assess our progress toward our environmental goals.

h. Educate employees and partners about their responsibilities under this policy and recognize them for outstanding participation.

i. Sustain partnerships with local, state and federal regulatory agencies to continue compliance with existing and new regulations, legislation, and other requirements.

j. Ensure the community's awareness of our environmental policy through press releases, public meetings, and the world-wide-web.

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k. Enhance mission sustainability by focusing on readiness requirements and compliance.

1.4.3 INTERDISCIPLNIARY INRMP DEVELOPMENT

The Natural Resources Program on FAPH is the lead in developing, maintaining, and updating the INRMP. However, several other installation-level departments and programs are needed to successfully implement the INRMP and to maintain the Plan's operational integrity. The INRMP was developed with a cross-functional and interdisciplinary team from within the DPW (Divisions and Branches), DPTMS (Range Operations), and DFMWR (Outdoor Recreation). A series of inter-active planning meetings between DPW (Divisions and Branches) and DPTMS (Range Operations) were held every two weeks from September 2010 through March 2011 to identify the long-term desired future conditions of the FAPH terrestrial and aquatic landscape. Input from those meetings was used to develop goals, objectives, and an overall natural resources management trajectory that balances ecosystem-level management (e.g., species, habitats) with necessary military terrain conditions (e.g., mounted and dismounted maneuver space, line-of-sight). These meetings also identified major natural resources issues and potential strategies for addressing those challenges.

The Natural Resources Team used the content of these inter-active planning meetings to develop long-term goals and objectives (Section 1.4.4). Final goals and objectives were approved after mission coordination and further discussions with cooperating agencies and partners. INRMP goals and objectives reflect the direction of FAPH's Natural Resources management program. They were developed by considering and incorporating issues and management concerns obtained from cooperating agencies, by the military mission(s), lessons learned, and other interested stakeholders.

1.4.4 INRMP SUPPORT FUNCTIONS

The INRMP serves an important role in support of the Installation Strategic Action Plan which functions to ensure that full operational readiness is achieved while meeting statutory requirements. The INRMP is leveraged to identify, assess, and develop alternatives when conflicts occur (or are projected to occur) between installation activities and natural resource management requirements and to ensure compliance with all applicable federal, state, and local laws, regulations, and policies. Information in the INRMP that is important to comprehensive planning includes data on the location, quantity and condition of natural resources. The INRMP also details natural resources management activities that need to be considered during comprehensive planning efforts.

1.4.5 GOALS & OBJECTIVES

The goals and objectives of this INRMP address natural resource management in support of the military mission, conservation of biological resources, and other sustainable uses (consumptive or recreational) of these resources (Table 1-1). INRMP goals align with the U.S. Army IMCOM

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Campaign Plan, The Army Strategy for the Environment, FAPH Strategic Action Plan, and FAPH's Range Complex Master Plan.

Table 1-1. INRMP Goals, Objectives, and Performance Measures

Goal	Objective(s)	Performance Measure(s)
1.0 Sustainably manage the Army's natural resources to support Mission requirements	1.1 Coordinate with military land users to identify Mission requirements	(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)
	1.2 Sustainably manage habitats to meet doctrinal training requirements	(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned (3) % of Open Areas in prescription (4) Deer density (per mi^2) (5) WASH Plan (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities	(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR (5) Open area condition (6) Annual updates to Hunting and Fishing Regulations
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	(1) Outreach events (2) Recreation Safety (3) Public wildlife viewing opportunities
	2.3 Implement activities that mutually benefit installation natural resources management and the community	(1) Recreational user Satisfaction (2) Recreational user trends
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity.	(1) Population indices (2) Suitable habitat (acres) (3) Sufficient no. of adequately trained CLEOs
	3.3 Manage invasive species to limit impacts to native habitats	(1) Treatment / Control (% of occurrence sites) (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials

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1.4.6 DOD CONSERVATION METRICS

The DOD has seven Natural Resource Conservation Metrics to assess the success of military installations in the fulfillment of the INRMPs. The metrics are:

a. INRMP Project Implementation - the execution of actions and projects taken to meet INRMP goals and objectives

b. Listed Species and Critical Habitat - the extent to which federally listed species have been identified and are in the INRMP

c. Partnership's Effectiveness - the successful collaboration between FAPH, the USFWS, and the VDGIF as it pertains to the implementation of this INRMP

d. Fish and Wildlife Management and Public Use - the availability and adequacy of public recreational use opportunities such as fishing and hunting and access for handicapped and disabled persons, given security and safety requirements

e. Team Adequacy - the adequacy of the Natural Resources Team in accomplishing INRMP goals and objectives

f. Ecosystem Integrity - the current status, management effectiveness, and trends of ecosystem to support and maintain a community of organisms that have a species composition, diversity, and functional organization comparable to those in respective region

g. Support of the Mission - the level to which existing natural resources requirements support the installation's ability to sustain the current operational mission with no net loss of mission capability

1.5 CONDITIONS FOR IMPLEMENTATION AND REVISION

1.5.1 Implementation

The Environmental Quality Control Committee (EQCC), Real Property Planning Board (RPPB), and FAPH Strategic Action Plan are the three formal mechanisms that integrate the INRMP and natural resources management into facility-wide activities. The EQCC is a communications forum for environmental planning and management of FAPH. The RPPB includes representatives from Command, DPW (all divisions), DPTMS, and tenant partners. The Strategic Action Plan outlines the near and long-term vision for maintaining FAPH's operational readiness.

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The FAPH DPW (ENRD) is responsible for the planning and implementation of the INRMP in coordination and joint participation with DPTMS (Range Control), DFMWR, and DES. The designated Natural Resources Specialist is responsible for tracking and coordination of the INRMP. This is accomplished through internal and external coordination meetings and specific INRMP coordination meetings. Other evaluation mechanisms exist through the Environmental Performance and Assessment System (EPAS). Chapter 16 covers INRMP implementation in more detail.

All requirements set forth in this INRMP requiring the expenditure of the FAPH's funds are expressly subject to the availability of appropriations and requirements of the Anti-Deficiency Act (31 U.S.C. Section 1341). No obligation undertaken by FAPH under the terms of this INRMP will require a commitment to expend funds not obligated for a particular purpose.

1.5.2 ANNUAL REVIEW / UPDATES

Natural resources management is a dynamic process and, as such, management plans often require frequent reviews and updates. Following completion of the INRMP, the Natural Resources Program will conduct an annual review and update to account for changes in the military mission, condition of natural resources, and the ecosystem and regulatory requirements. ENRD will present the findings from this annual review to senior leaders and necessary partners, as appropriate. ENRD will also document the outcome of this review—through a summary on the rationale for the conclusions reached, updates on accomplishments, and future changes to goals and objectives. This written documentation will be jointly executed and placed in an ongoing appendix of the INRMP. Section 101(b)(2) of the Sikes Act [16 U.S.C. 670a(b)(2)] states that each INRMP "must be reviewed as to operation and effect by the parties thereto on a regular basis, but not less often than every 5 years." Although the Sikes Act specifies only that a formal review must be completed no less often than every 5 years, DOD policy requires installations to review INRMPs annually in cooperation with the other vested parties. Annual reviews facilitate "adaptive management" by providing an opportunity for all parties to review the management accomplishments relative to the existing goals and objectives and then adjust goals and objectives or management application appropriately. Annual reviews also allow FAPH program managers to review the status of working or proposed actions and identify any additional requirements or changes that need to be implemented to ensure successful implementation of this INRMP.

A significant change in FAPH's mission or its natural resources management strategies would necessitate an INRMP revision, which includes coordination with USFWS and Commonwealth regulators at minimum. The need for revision is evaluated during the INRMP annual review and coordination process.

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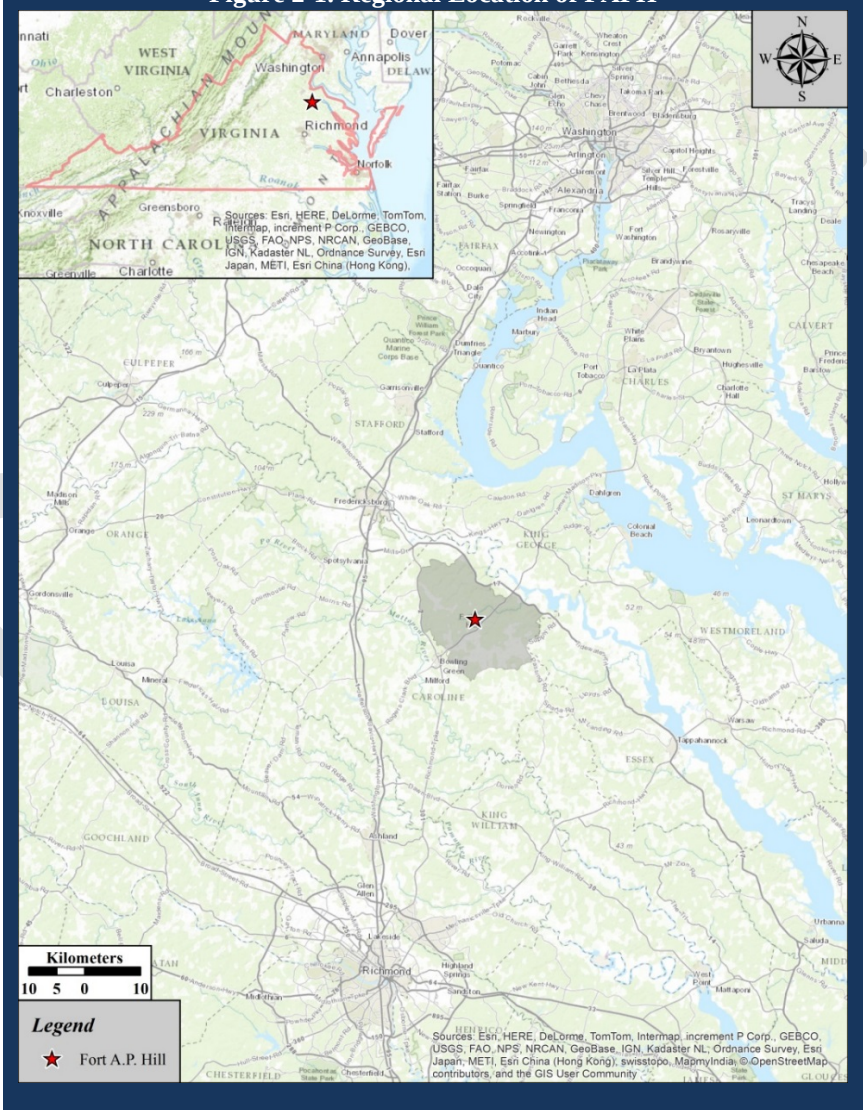
2.0 INSTALLATION OVERVIEW

2.1 LOCATION AND AREA

The FAPH Military Reservation occupies 75,794 acres of land (approx. 116 sq. mil.) within Caroline and Essex counties, Virginia. It is located within the Inner Coastal Plain physiographic province along the gradual transition zone toward the Outer Piedmont physiographic province and is situated approximately 40 miles west of the Chesapeake Bay between the Rappahannock and Mattaponi Rivers. In relation to major cities, FAPH is 75 miles south of Washington, D.C., 100 miles southeast of Baltimore, Maryland, and 35 miles north of Richmond, Virginia (Figure 2-1). The Blue Ridge Mountains and the Atlantic Ocean are both within 100 miles of the installation.

Figure 2-1. Regional Location of FAPH



2.2 INSTALLATION HISTORY

FAPH was established as an Army training facility on June 11, 1941, pursuant to War Department General Order No. 5. In its 1st year, the installation was used as a maneuver area for the II Army Corps and for three activated National Guard divisions from Mid-Atlantic States. In the autumn of 1942, FAPH was the staging area for the headquarters and corps troops of Major General Patton's Task Force A, which invaded French Morocco in North Africa. During the early years of World War II, the post continued to be a training site for corps and division-sized units. Commencing in 1944, field training was conducted for Officer Candidate School and enlisted replacements from nearby Forts Lee, Eustis, and Belvoir.

During the Korean War, FAPH was a major staging area for units deploying to Europe, including the VII Corps Headquarters and the Third Armored Cavalry Regiment.

FAPH was the major center for Engineer Officer Candidate School training during the Vietnam War and served as a mobilization station for Military Police units during Desert Storm.

FAPH served as a training support platform for many units deployed during Operations Enduring Freedom, Iraqi Freedom, and ongoing military operations.

2.3 MILITARY MISSION

FAPH has trained the U.S. Military for six decades. Today, FAPH is a Regional Collective Training Center that focuses on providing realistic joint and combined arms training to branches of the Armed Forces and foreign allies. FAPH provides ongoing training support for conventional / unconventional joint and interagency units engaged in Homeland Defense and Overseas Operations. FAPH's state-of-the-art training facilities, ranges, and professional support staff, continue to ensure America's Armed Forces have the edge needed to win in the 21st Century operational environment. FAPH is used year-round for military training of both active and reserve troops of the Army, Navy, Marines, and Air Force, as well as other government agencies. These include the Departments of State and Interior; U.S. Customs Service; and federal, state, and local security and law enforcement agencies.

FAPH's number one mission is to ensure our Warriors are fully prepared to fight and win the nation's wars. The installation's full acreage is used to support that mission. With 116 square miles of land area and air space, FAPH is one of the premier training venues in the Eastern U.S. Its unique combination of natural resources, maneuver space assets, and talented professional staff provide an outstanding environment for fulfillment of the FAPH mission.

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2.4 INFRASTRUCTURE AND OPERATIONS

2.4.1 POPULATION

Approximately 300 personnel are assigned to the Garrison, including federal civilians, onsite contractors, and two military positions. More than 100 additional military and civilian employees work for tenant organizations

2.4.2 INFRASTRUCTURE

There are over 1,200 buildings and structures at FAPH with a total building space of more than 1.9 million square feet. The developed area also includes approximately 500 miles of asphalt and gravel roads / trails.

2.4.2.1 CANTONMENT

Ninety-eight percent (98%) of FAPH consist of undeveloped (i.e. “unimproved”) operational training lands. This large landscape of forests, fields, and wetlands contain approximately 6,000 acres of “improved” lands (e.g., air fields, lawns, built-up areas) with approximately 1,300 acres of that classified as cantonment area (e.g., housing, recreation areas, administrative facilities).

2.4.2.2 GROUND TRANSPORTATION

FAPH maintains approximately 500 miles of primary (asphalt) roads, secondary (gravel) and tertiary (unimproved) access trails, and more than 600 culverts to ensure accessibility to the installations training lands. Much of the on-post interior road / trail network existed prior to the creation of FAPH. Improvements since the 1940's have consisted primarily of all-weather surface treatment for the primary roads and alignment improvements. Two underpasses (U.S. Route 301) connecting the northwest and southeast areas of the Post have been built, in addition to an on-grade intersection at the main entrance. The road network at FAPH is utilized extensively for various training operations. Tracked vehicles maneuver exclusively on tank trails. The primary road network totals approximately 80 miles of all-weather, asphalt and bituminous surfaced roads ranging from 18 to 30 feet wide. Secondary and tertiary light duty roads vary from bituminous surfaced all-weather roads in the campsite areas to numerous earth trails covered with gravel and dirt providing access to training areas. Roads were constructed to minimize cuts and fills and conform to the land contour. Shoulders are generally absent or undefined. Wide cleared areas occur along some roads and these cleared areas are used as tracked vehicle roadways or tank trails. There are approximately 60 miles of designed tank trails, including some with reinforced concrete crossing pads. The trails are regularly maintained and most streams and cross-drainages are culverted with some fords and several riprap low-water crossings maintained in low traffic areas.

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Table 2-1. FAPH Land Use Summary		
Operational Areas	**Acres (+/-)**	**% of Total Area**
Live-fire ranges and Impact Areas	26,721	35.3
Maneuver Training Areas	45,866	60.5
Airfield and Aviation Facilities	70 *	0.1
Ammunition Storage	20	0.0
Drop Zone	800 **	1.1
Research & Development	930	1.2
Sanitary Landfills (closed)	90	.1
Cantonment	1,297	1.7
TOTAL	**75,794**	**100**
* Includes lateral clearances, takeoff safety zone and control tower operations area		
** Approximately 1,400 acres required with quantity-distance safety clearances		
*** Includes 900 acres for tenants		

Table 2-2. FAPH Grounds Classification		
Grounds Classification:	**Acres (+/-)**	**% of Total**
Improved Grounds Included athletic fields, lawns, drillfields, built-up areas, grassed airfields, heliports, and other areas intensively maintained.	5,988	7.8
Unimproved Grounds Includes forests, maneuver areas and artillery ranges, active Impact Areas, gravel pits, beaver ponds, streams and wetlands, roads, trails, and firebreaks, and outgrants.	69,806	92.2
TOTAL	**75,794**	**100**

2.4.3 MILITARY OPERATIONS AND ACTIVITIES

2.4.3.1 REGIONAL OPERATIONS AND ACTIVTIES

Situated within the National Capital Region and the Military District of Washington, FAPH ‘s Mission Essential Tasks support Joint Forces Headquarters of the National Capitol Region and the U.S. Army Military District of Washington.

2.4.3.1.1 JOINT FORCES HEADQUARTERS NATIONAL CAPITOL REGION

Joint Force Headquarters-National Capital Region plans, coordinates, maintains situational awareness, and as directed, employs forces for homeland defense and defense support of civil authorities in the National Capital Region Joint Operations Area to safeguard the Nation's capital. Mission Essential Tasks include:

a. Coordinate Civil Support within the US

b. Conduct Joint Intelligence Preparation of the Operational Environment (JIPOE)

c. Coordinate Support for Forces in the Joint Operations Area (JOA)

d. Manage Logistics Support in the JOA

e. Acquire and Communicate Operational Level Information and Maintain Status

f. Prepare Plans and Orders

g. Establish, Organize, and Operate a Joint Force Headquarters

h. Coordinate and Integrate Joint Multi-National and Interagency Support

i. Provide Protection for Operational Forces, Means, and Noncombatants

2.4.3.1.2 U.S. ARMY MILITARY DISTRICT OF WASHINGTON

The U.S. Army Military District of Washington serves as the Army Forces Component and core staff element of the Joint Force Headquarters-National Capital Region to conduct operations that deter, prevent, and respond to threats aimed at the National Capital Region; and conducts world-class ceremonial, musical and special events in support of our Nation's leadership. Mission Essential Tasks include:

a. Conduct Command and Control

b. Provide Logistics Support

c. Provide Personnel Services Support

d. Conduct Civil Support Operations

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e. Conduct Official Ceremonial, Musical, Public & Special Events

2.4.3.2 INSTALLATION OPERATIONS AND ACTIVITIES

FAPH's military training mission is relatively unique in the Active Army in that virtually all of the Warriors from the hundreds of units that train here annually are permanently stationed at other installations.

FAPH offers 48,000 acres of mounted and dismounted maneuver space in an arrangement of 30 specific maneuver training areas and a 28,000-acre live-fire Range Complex that supports 39 standard and non-standard firing ranges, embedded in a single contiguous land area beneath 116 square miles of special use airspace that permits relatively unconstrained operations which makes FAPH an ideal setting in which to operate. FAPH airspace supports day and night fixed and rotary wing operations (non-/live-fire training) and extensive Unmanned Aerial Systems (UAS) operations. The installation supports current-theatre of war training scenarios via several Military Operations in Urban Terrain facilities.

As one of the Active Army's 13 Regional Collective Training Center, its proximity in the Mid-Atlantic region and to the National Capital Region, FAPH is indispensable to America's defense effort. It is an invaluable national asset in terms of its testing, evaluation, and training mission support to the DOD, and its bountiful cultural and natural resources. FAPH is unique because of the depth and breadth of testing and training it supports. Past performance proves its unquestionable value.

No other U.S. military installation in the Eastern U.S. offers such an expanse of land and water located in an ideal climate with so much diversity of terrain and vegetative cover. Among Army installations, only FAPH offers access to nearly 76,000 acres of largely unrestricted terrain features such as evergreen, deciduous, or mixed forests, rolling hills and openly vegetated expanses, and access to water all in one location to support a variety of mission requirements. On any given day, the interplay of units training and installation support, all focused on ensuring that our nation deploys the most capable and adept Warriors is unsurpassed, which generates a synergism that cannot be quantified. In recognition of the training support it offers, FAPH has won, or placed second or third in the Army Community of Excellence Award program several times from 2004-2013.

2.5 SURROUNDING COMMUNITIES

Incorporated communities proximal to FAPH include the town of Bowling Green to the west, the town of Port Royal to the East, and City of Fredericksburg to the north (Figure 2-2). Several small unincorporated residential communities and individual home sites are also located in the vicinity of the installation. FAPH is very active with more than 100,000 people visiting, working, and using the installation on an annual basis. FAPH is the largest employer in Caroline County

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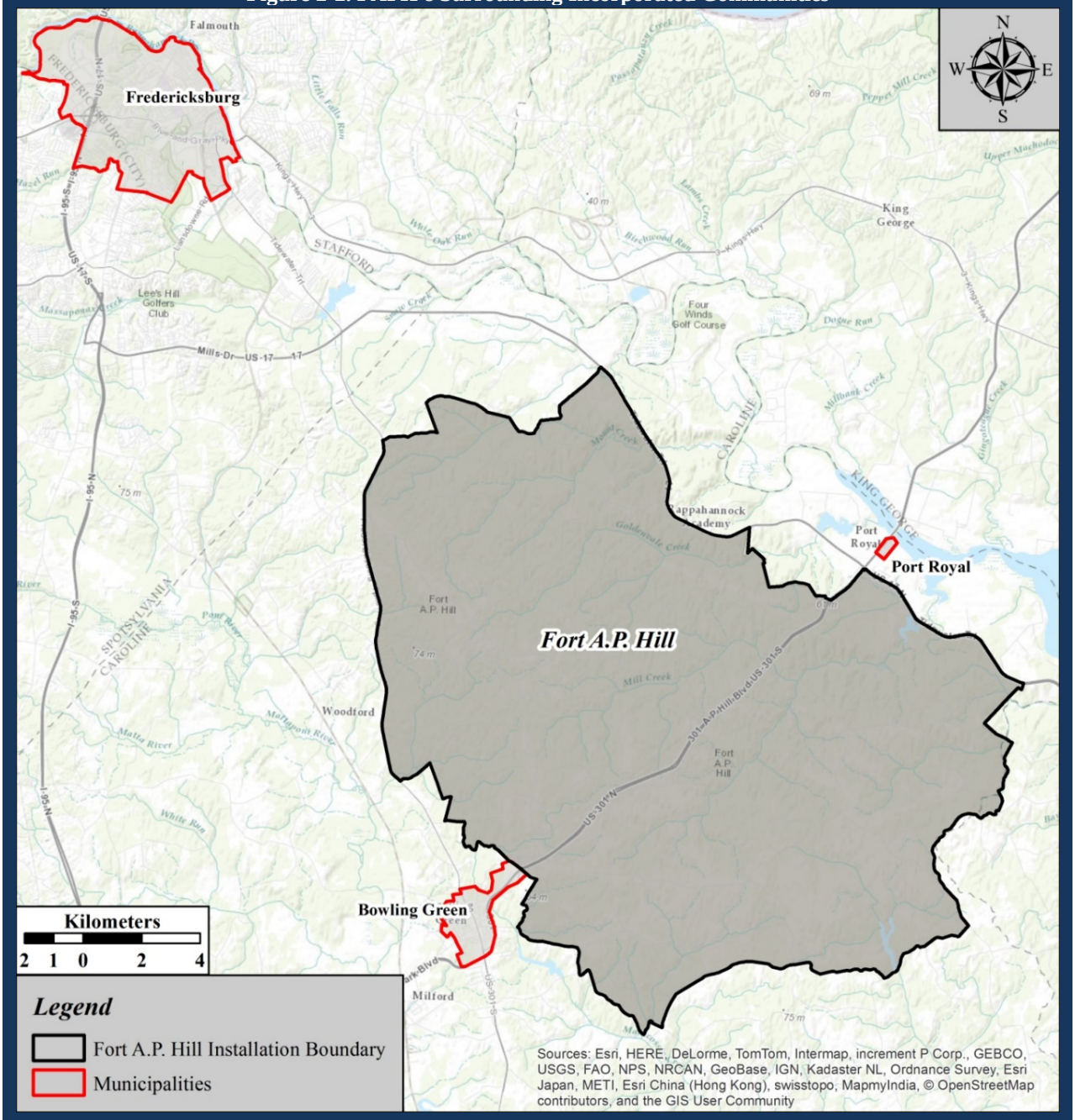
and has an estimated economic impact within the Commonwealth of more than 240 million dollars annually.

Figure 2-2. FAPH's Surrounding Incorporated Communities



The landscape surrounding FAPH has changed markedly since its inception in 1941. Though the area is still predominantly of rural character, residential development pressure from the Washington D.C. Metropolitan area and along the Rappahannock River threatens the long-term operational integrity of the installation. Residential development is incompatible with military training. Noise, dust, and smoke that are some of the common nuisances frequently generated during training operations and / or the management of facilities. Conversely, light pollution from developed areas can degrade the quality of nighttime training activities. Accordingly, FAPH initiated the Army Compatible Use Buffer (ACUB) program in 2006 as a means to maintain the installation's readiness capabilities and promote compatible development on neighboring lands. Through the ACUB program, FAPH partners with federal, state, and private organizations to preserve open space on lands surrounding the installation. To fully integrate FAPH's mission into the County-level land use planning, FAPH facilitated the development of a Joint Land Use Study with surrounding localities. FAPH also serves on the Technical Review Committee for Caroline County for Rezoning Requests.

Table 2-3. Decadal Population Counts Proximal to FAPH

City / County	1940	1950	1960	1970	1980	1990	2000	2010
Fredericksburg	10,066	12,158	13,639	14,450	15,322	19,027	19,279	24,286
Caroline	13,945	12,471	12,725	13,925	17,904	19,217	22,121	28,545
Essex	7,006	6,530	6,690	7,099	8,864	8,689	9,989	11,151
King George	5,431	6,710	7,243	8,039	10,543	13,527	16,803	23,584
Spotsylvania	9,905	11,920	13,819	16,424	34,435	57,403	90,395	122,397
Total	**46,353**	**49,789**	**54,116**	**59,937**	**87,068**	**117,863**	**158,587**	**209,963**

Source: U.S. Census Bureau

2.6 REGIONAL LAND USE

The lands surrounding FAPH are largely undeveloped, rural in character, and are devoted to:

a. Agriculture / timber – Major tracts of land are used for non-industrial agriculture with accompanying forests on the properties.

b. Recreation / natural resources management areas – The USFWS Rappahannock River Valley National Wildlife Refuge is adjacent to FAPH. The goal of the refuge is to protect 20,000 acres of habitat along the Rappahannock River. Much of the properties along the river corridor are undeveloped and are considered highly valuable for land preservation efforts. The VDGIF owns and manages two Wildlife Management Areas (WMA) near FAPH— the Pettigrew WMA and the Mattaponi WMA—both of which were acquired as a result of FAPH's presence in the area.

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c. Historic Preservation – The region is a rich source of historic and cultural heritage sites. Civil War-era, pre-European Native American sites, and early American sites are prominent historic features prevalent in the area. The National Park Service maintains several Military Parks and smaller properties in the area and the Virginia Department of Historic Resources holds conservation easements on several properties.

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3.0 GEOPHYSICAL ENVIRONMENT

3.1 CLIMATE AND AIR QUALITY

3.1.1 CLIMATE

FAPH is located within the Tidewater Climate Region of Virginia; the Blue Ridge Mountains to the west act as a temperature and moisture barrier while the open waters of the Chesapeake Bay and the Atlantic Ocean to the east moderate the ambient climate and contribute to the warm and humid summers and temperate winters.

The Gulf Stream has a significant influence on Virginia and Tidewater weather patterns. Winter storms generally move west to east, and in the vicinity of the coast, move northeasterly to parallel the Gulf Stream. However, hurricanes and tropical storms (annual occurrences in August and September) generally approach Virginia east to west and move along a northeasterly track. Thunderstorms occur in all months of the year but are most common in summer and are most likely to occur during the warmest part of the day. Tornados and earthquakes seldom threaten the area, though both occur on an infrequent basis to relatively minor extents. Atmospheric thermal inversions can occur any time of the year but are most frequent and intense during the late summer and early autumn.

Local climate data from the weather station in Corbin, Virginia (located adjacent to FAPH) indicate that seasonal temperature peaks occur in January and July. The average maximum temperature in January is 44 degrees Fahrenheit with an average minimum temperature of 24 degrees Fahrenheit. The average maximum temperature in July is 87 degrees Fahrenheit with an average minimum temperature of 66 degrees Fahrenheit. Pleasant weather prevails during the spring and autumn months. The average annual precipitation of 44 inches is fairly evenly distributed throughout the year and largely occurs from the interplay of warm and cold fronts. However, precipitation from hurricanes and tropical depressions can provide 10-40% of Virginia's total annual precipitation.

3.1.2 AIR QUALITY

Caroline County is an attainment area for all federal and state air quality standards (DEQ 2014). At FAPH, there are minor air emissions from heating equipment, construction, other equipment, maintenance activity, weapons firing, aircraft, training activities, generators and other fuel burning equipment, and vehicle operation. The installation currently has an air quality state operating permit for all regulated emissions. The most recent emission data at the installation were collected in 2010 (Table 3-1). These conditions are further documented in the installation's Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II Emissions Reporting (McBride 2015).

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In addition to these emissions, activities at Fort A.P. Hill also result in smoke and particulates being released into the air. Smoke is produced from some training exercises as well as from prescribed burning and wildfires.

Table 3-1. FAPH Air Emissions *	
Pollutant	**Emission (in tons/year)**
Volatile organic compounds	2.45
Nitrogen oxides	2.75
Sulfur oxides	0.69
Particulate matter	0.16
Carbon monoxide	0.67
* As of 2010	

With regard to watershed health, air quality has a direct effect on water quality and vegetation health. Air borne pollutants (including nutrients such as nitrogen and toxins such as mercury) can be transferred to the ground and surface water through direct (dry) deposition and wet deposition during precipitation events. This process of air deposition has been identified as a major source of pollution to surface water bodies including the Chesapeake Bay.

Additional information on the potential effects of air quality on watershed health is available in FAPH's Watershed Management Plan (Appendix H).

3.2 LANDFORMS

FAPH lies within a physiographically diverse landscape, located within the Eastern Temperate Forest, Southeastern USA Plains, Southeastern Plains, Rolling Plains ecoregion (EPA 2015) and within the northern division of the Inner Coastal Plain physiographic province of Virginia (VDCR 2015a). FAPH also lies within the northern half of the Coastal Plain physiographic province (uplands sub-province). Since the installation lies just east of the Fall Line, it shares characteristic topographic features of both the Piedmont and Coastal Plain physiographic provinces.

Superimposed over these various physiographies lies the area designated as the Chesapeake Bay Lowlands, which comprise most of Delaware, all of the coastal plain in Maryland, the District of Columbia, and coastal Virginia south to the James River. The Chesapeake Bay Lowlands is an ecoregion centered on the Chesapeake Bay and takes into account the people and natural communities in its immediate surroundings (The Nature Conservancy 2003).

The topography of the Coastal Plain is a terraced landscape that stair-steps down to the coast and major rivers. Terrain at the installation includes level plains with rolling countryside interrupted by numerous shallow ravines that contain areas of sharp relief. Elevation averages 150 feet above mean sea level (msl) for most of the installation and ranges from a low of 25 feet near the Rappahannock River to a high of 255 feet above msl near State Route 2. The installation contains numerous intermittent and perennial streams and associated wetlands. The northern two-thirds of the installation drain northward into the Rappahannock River. The southern one-

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third drains southward to southeasterly into the Mattaponi River in the York River watershed. These two major drainage systems eventually feed into the Chesapeake Bay.

For general classification purposes, local landform types on FAPH are classified as:

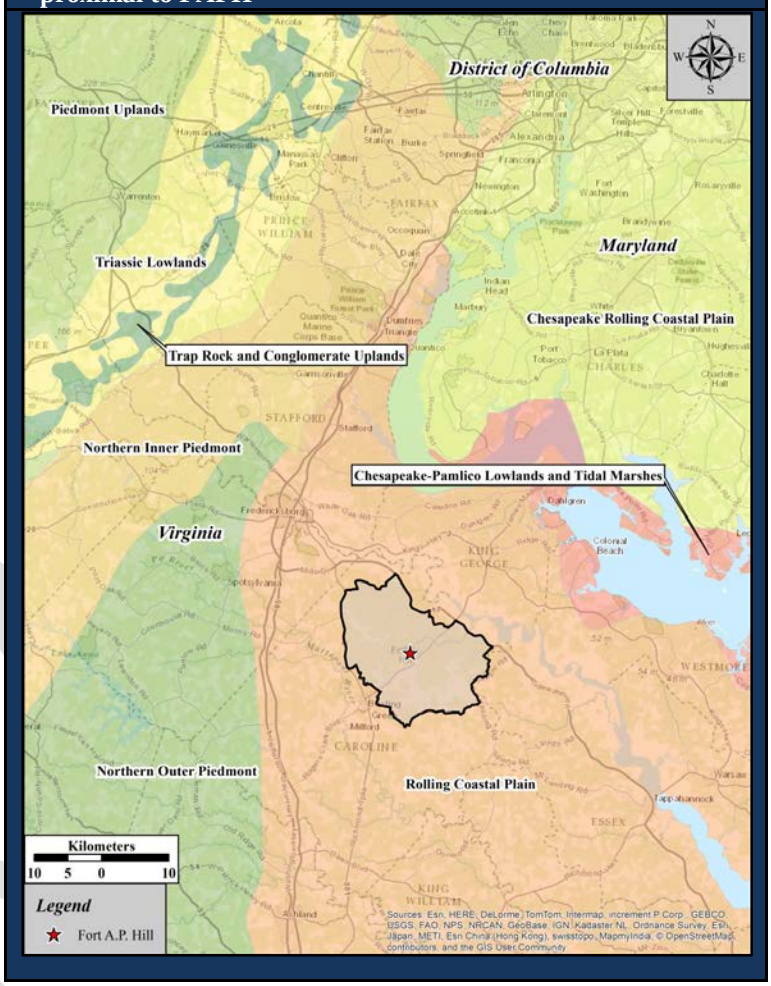
a. Bottomland - Generally wetlands, streams, swamps, and floodplains.

b. Cove - Found along drainage patterns of intermittent streams. Site quality is very high and well adapted to production of yellow poplar (*Liriodendron tulipifera*) and white oak (*Quercus alba*). Cove lands will often overlap with lands classed as slope.

c. Slope - These areas are immediately adjacent to coves and bottomlands. They exhibit great variations in site quality, degree of slope, and consequently vary greatly in vegetation.

d. Upland - These lands extend from the higher elevations to the break of the adjacent slopes. The lands are usually dry and best suited to pine (*Pinus* spp.), red oak (*Quercus rubra* and *Q. falcata*) and chestnut oak (*Quercus montana*) growth.

Figure 3-1. Ecoregions and Physiographic Provinces proximal to FAPH



3.3 GEOLOGY AND SOILS

3.3.1 GEOLOGY

3.3.1.1 GEOLOGIC FORMATIONS

The Coastal Plain landscape was formed over the last few million years as sea level rose and fell in response to the repeated melting and growth of large continental glaciers and as the Coastal

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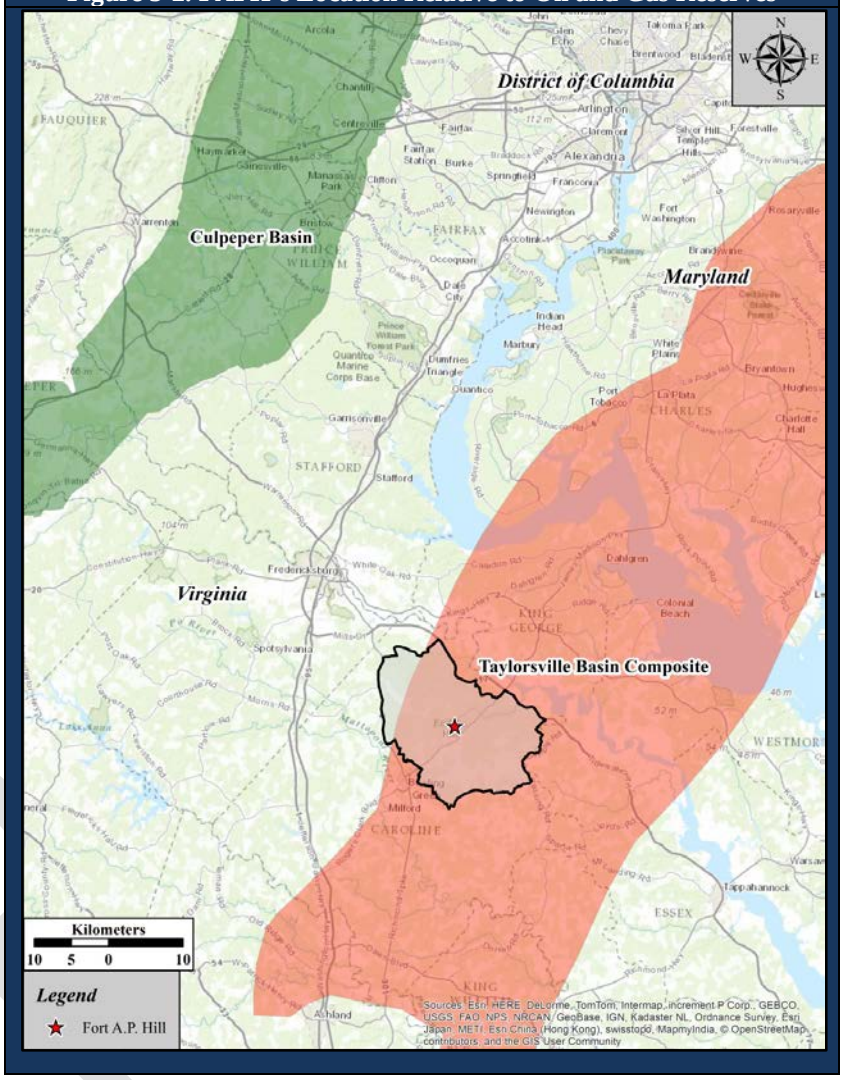
Plain slowly uplifted. During the glacial maxima, much of the continental shelf was emergent and the Susquehanna flowed through the Chesapeake lowland and across the exposed shelf to the sea 80 km or more to the east. The Chesapeake Bay was created about 5,000 to 6,000 years ago when the lower course of the Susquehanna River through the Chesapeake lowland was flooded as meltwater from the large Pleistocene continental glaciers raised the sea level. Continuing sea level rise and shoreline erosion caused the bay to expand its aerial extent.

Figure 3-2. FAPH's Location Relative to Oil and Gas Reserves



The Virginia Coastal Plain is underlain by a thick wedge of sediments that increases in thickness from a featheredge near the Fall Zone to more than 4,000 meters under the continental shelf. These sediments rest on an eroded surface of Precambrian to early Mesozoic rock. Two-thirds of this wedge is comprised of late Jurassic and Cretaceous clay, sand, and gravel; they were stripped from the Appalachian mountains, carried eastward by rivers and deposited in deltas in the newly formed Atlantic Ocean basin. A sequence of thin fossiliferous marine sands of Tertiary age overlie the older strata. They were deposited in warm, shallow seas during repeated marine transgressions across the Coastal Plain. This pattern of deposition was interrupted about 35 million years ago by a large meteorite that plummeted into a shallow sea, and created a crater more than 90 km in diameter, termed the Chesapeake Bay Impact Structure. It was subsequently buried under about 1.2 km of younger sediment. Latest Tertiary and Quaternary sand, silt, and clay, which cover much of the Coastal Plain, were deposited during interglacial highstands of the sea under conditions similar to those that exist in the modern Chesapeake Bay and its tidal tributaries (College of William & Mary 2015).

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3.3.1.2 GEOLOGIC BASINS

FAPH is located above the Taylorsville Basin, a Mesozoic-era basin that extends from the offshore Atlantic continental margin westward beneath the Coastal Plain to the Blue Ridge Mountains (Figure 3-2). The basin is suspected of containing significant amounts of natural gas resources and is currently experiencing exploration by industry. Additional basins located in the vicinity of FAPH include the Richmond, Delmarva, and Culpepper Basins (Milici *et al.* 2012).

3.3.2 SOILS

The area encompassing FAPH is comprised of seven different soil types (Table 3-2) (NRCS 2015). Mixed and layered deposits of clay, sand, green sand, marl, silt, and diatomaceous earth, as well as extensive areas of gravelly sand and clay occur within the area. Soil textures range from silt loam to gravelly sand with large areas of fine sandy loam and loamy sand.

The Rolling Coastal Plain is mostly underlain by unconsolidated tertiary sand, silt, clay, and gravels of the Bacons Castle Formation and the Chesapeake Group (Woods *et al.* 1999); Holocene-age deposits and metamorphic rocks are typically absent. Ultisols are common and have a thermic temperature regime (Buol and Eswaran 1999); they are better drained than the Aquults of the Middle Atlantic Coastal Plain and are warmer than the soils of the Chesapeake Rolling Coastal Plain.

Table 3-2. Common Soils of FAPH

Label	Soil Name and Slope	Soil Description
1B	Altavista sandy loam, 0-2% slopes, very rarely flooded	Very deep, nearly level, and moderately well drained. Sandy loam surface with same or loam subsoil. Not highly erodible. Leaching Index of 13(CAUTION). Moderately well suited to crops, pasture, and hay.
4A	Bibb-Chastain complex, 0-2% slopes, frequently flooded	Deep and poorly drained, nearly level broad upland flats and low depressions. Sandy loam surface with same, silty loam, or loamy sand subsoil. Hydric and non-highly erodible. Leaching index of 6= awareness of leaching may occur. Not suited for cultivated crops, moderately suited for pasture and hay.
7A	Chastain loam, 0-2% slopes, ponded	Very deep, poorly drained, often ponded. Seasonal high water table surface to depth of one foot. Silty clay loam texture.
10E	Kempsville-Emporia-Remlik complex, 15-50% slopes	Very deep, steeply sloping, and well drained. Surface layer of Emporia is loamy fine sand and fine sandy loam with a sandy clay loam or clay loam subsoil. Surface layer of a Rumford is loamy sand with a fine sandy loam subsoil. Very highly erodible. Not suited to cultivated crops and poorly suited to pasture and hay.

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Table 3-2. Common Soils of FAPH		
Label	**Soil Name and Slope**	**Soil Description**
11B	Kempsville-Emporia complex, 2-6% slopes	Very deep, gently sloping, and well drained. Surface layer is loam with a clay subsoil. Potentially highly erodible. Leaching Index of 6=awareness of leaching may occur. Moderately well suited to crops, pasture, and hay with limitations.
11C	Kempsville-Emporia complex, 6-10% slopes	Well drained with a fine sandy loam surface layer. Subsoil is sandy clay. Highly erodible. Leaching Index of 13=CAUTION. Well suited for crops and pasture with severe limitations.
21C	Slagle-Kempsville complex, 2-15% slopes	Very deep, sloping, and well drained. Surface layer is sandy loam with clay subsoil. Highly erodible. Leaching Index of 9=awareness of leaching may occur.

The Coastal Plain is underlain by a wedge-shaped mass of semi-consolidated to unconsolidated sediments that thickens toward the ocean and rests on a surface of crystalline rock. The thickness of the sediments varies from zero feet at the Fall Line to approximately 10,000 feet along the coast of North Carolina. The thickness of these Cretaceous to Late Tertiary Age sediments at FAPH is approximately 400 to 500 feet. The sediments are poorly to semi-consolidated and consist of complexly interbedded lenses and layers of clay, silt, and sand, with minor amounts of lignite, gravel, and limestone. The sand, gravel, and limestone compose aquifers of varying extent. Some aquifers are traceable over long distances, whereas others are local. The sediments that compose the Coastal Plain Physiographic Province were deposited in nonmarine, marginal marine and marine environments. Throughout most of FAPH, fluvial sand and gravel deposits of the Late Tertiary Bacons Castle Formation occur at the ground surface in the upland areas between the drainages. These deposits are up to approximately 25 feet thick.

The physical and chemical properties of soils are largely dependent on the geologic parent material, and have a significant effect on watershed conditions, including vegetation density and composition, and watershed hydrology. The soils within FAPH can be classified into four groups: upland soils, valley slope soils, floodplain soils, and Rappahannock River terrace soils.

The upland soils are well-drained sandy soils that occur on gently rolling uplands with slopes ranging from two percent to five percent. Depth to groundwater within these soils is greater than six feet at high water. These soils have high permeability and low shrink-swell potential and are subject to severe erosion when cleared of vegetation, unless runoff is controlled. Representative soil types at the installation include Slagle-Kempsville and Kempsville-Emporia complexes. Upland soils comprise about 80 percent of the area included in the installation.

The valley slope soils are thick, moderate to well-drained loamy, gravelly sand and clay soils that occur on rolling to steep terrain. Slopes commonly vary from five percent to 15 percent,

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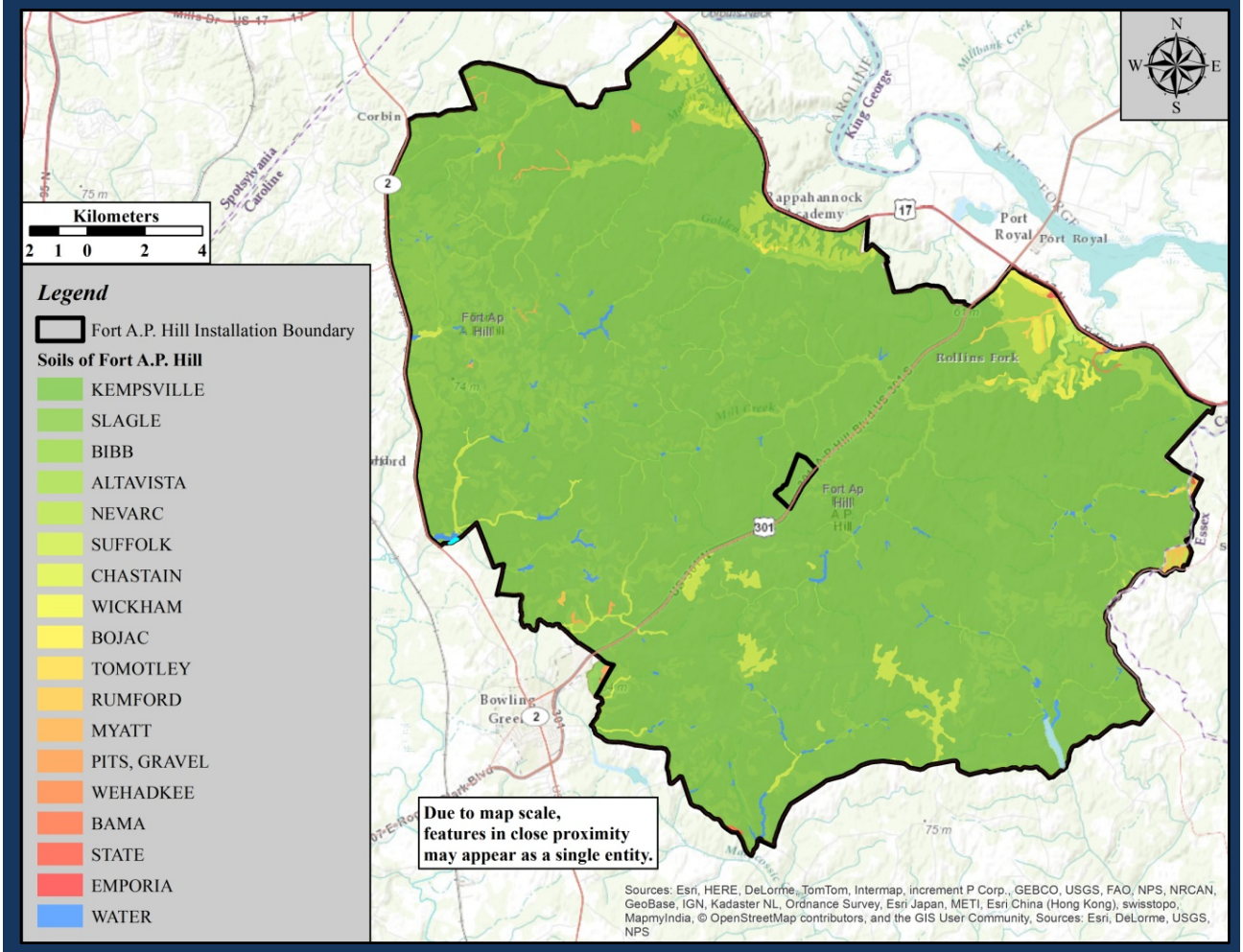
with a maximum range of eight percent to 40 percent. Depth to groundwater within these soils is typically about six feet during high water. These soils have low permeability and high shrink-swell potential. Runoff is medium to rapid on these soils, and erosion is a significant concern where the soil is exposed. A representative soil of this type at the installation is Altavista.

Figure 3-3. FAPH Soils Map



The floodplain soils are deep, poorly drained sandy clay and silt that occur in narrow, nearly level areas of swamp, marshland, and along streams. These soils are derived from materials washed down from silty and sandy uplands. Depth to groundwater in these soils varies from zero to six feet with high water. The soils have low permeability and moderate shrink-swell potential. Erosion is not usually a problem with these soils due to their nearly level orientation. Representative soil types at the installation are the Bibb and Chastain series.

The Rappahannock River terrace soils are found only in the northeastern portion of FAPH, in areas with minimal to no slope. The Rappahannock River alluvial floodplain and terrace deposits are deep, well-to poorly drained, clay loam deposits on broad and nearly level areas. In low areas, these soils have a high water table. Depth to groundwater varies from one to five feet. Permeability varies considerably from high to low, and the shrink- swell potential is moderate. Runoff is slow on most of these soils, and erosion is not generally a problem due to gentle slopes. Representative soils of this type at the installation include the Altavista, Roanoke, and Wickham series.

3.4 HYDROLOGY

3.4.1 SURFACE WATERS

3.4.1.1 STREAMS

FAPH encompasses approximately 600 linear miles of intermittent / perennial streams that drain either to the Lower Rappahannock River Watershed (Hydrologic Unit Code (HUC) 02080104) and its tributaries to the north, or to the Mattaponi River Watershed (HUC 02080105) and its tributaries to the south. The Mattaponi River is located in the York River Watershed (HUC 02080107). Both the Rappahannock and York River are located within the Lower Chesapeake Bay Watershed (HUC 02080101).

The northeastern 75 percent of the installation drains to the Rappahannock River, and 25 percent of the southwestern portion drains to the Mattaponi River. Drainage patterns within the installation are dendritic on the gently sloping topographic areas, and trellis in the more deeply incised areas. The headwaters of the onsite streams are formed by groundwater discharges from shallow aquifers which commonly create wetlands that are locally referred to as seepage swamps. The watersheds comprised of these streams are located largely within the installation's boundaries. FAPH has more than 25 named streams, the headwaters of which all originate within its boundaries and flow off the installation. FAPH also contains smaller, unnamed streams that flow to the Mattaponi and Rappahannock Rivers. These streams have widths generally less than five feet. The dominant substrate consists primarily of silt and sand, with the subdominant substrate consisting of clay and pebble.

Streams are included in the FAPH geospatial stream centerline dataset and are based on the National Hydrological Data or modeled streams using ArcHydro software. None of the streams located within FAPH are classified as Wild and Scenic Rivers by the Department of the Interior (DOI 2015) or included in Virginia's Scenic Rivers Program (VDCR 2015b).

3.4.1.2 IMPOUNDMENTS

FAPH contains approximately130 impoundments and beaver ponds with a surface area totaling more than 790 acres. All of the impoundments located at FAPH were created as a result of

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construction since the installation was started in 1941 or beaver dams being constructed within the footprint of existing streams / wetlands. Major impoundments on FAPH are presented in Table 8-3.

3.4.1.3 WETLANDS

FAPH contains more than 6,300 acres of jurisdictional wetlands typical of the Atlantic Coastal Plain (Table 3-3). More than 75% of the wetlands on FAPH are either emergent or forested types. More information on wetlands and wetlands management is present in Chapter 12 of this INRMP.

Table 3-3. Palustrine Wetland Types on FAPH

Wetland Class	Acres (+/-)	% of Total
Aquatic Bed	235	3.7
Emergent Wetland	935	14.6
Forested Wetland	3,870	60.6
Rocky Shore	< 1	0.01
Scrub-Shrub Wetland	553	8.7
Streambed	95	1.5
Unconsolidated Bottom	680	10.7
Unconsolidated Shore	12	0.19
TOTAL	**6,381**	**100**

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4.0 ECOSYSTEM AND BIOTIC ENVIRONMENT

4.1 ECOSYSTEM

At the largest spatial scale, FAPH lies exclusively within the Atlantic Coastal Plain which stretches from Cape Cod south to Florida, extending east from the Fall Line to the North American Continental Shelf, 80 to 120 km (50 to 75 mi) offshore. The Fall Line is a zone of geologic transition that marks the boundary between the older, resistant, metamorphic rocks of the Piedmont and younger, softer, mostly unconsolidated sediments of the Coastal Plain. In Virginia, this boundary roughly corresponds to the route of Interstate 95 between Washington D.C. and Emporia. Virginia's Coastal Plain is a low-relief, terraced landscape that slopes gently toward the Atlantic Ocean from its highest elevations at the Fall line (~ 75 m / 250 ft.). Geologically speaking, this province is a young landscape sculpted during the last few million years by the repeated rising and falling of sea level during several cycles of Pleistocene glaciations. The Coastal Plain is underlain by a wedge of sediments that increases in thickness from the Fall Line to the continental shelf. Soils tend to be sandy, although deposits of terrace gravels, marine clays, and fossiliferous shells are common locally.

The inner Coastal Plain where FAPH is located is a broad upland, gently dissected by streams, and locally quite rugged where short, high gradient streams have incised steep ravine systems. Four large tidal rivers - the Potomac, Rappahannock, York, and James - drain the northern part of the inner Coastal Plain, flowing southeastward into the Chesapeake Bay and dissecting the area into three prominent peninsulas. The Northern Neck is the peninsula between the Potomac and Rappahannock Rivers, while the Middle Peninsula lies between the Rappahannock and York Rivers. The area between the York and James Rivers is simply referred to as The Peninsula.

The upland forests that originally covered much of the Virginia Coastal Plain have been extensively cleared or altered, so that it is now difficult to determine which species and natural communities were prevalent. Much of the contemporary forest consists of successional or silvicultural stands of loblolly pine (*Pinus taeda*), and secondary pine-hardwood forests that have developed after repeated cutting or agricultural abandonment. The most mature remnant stands on mesic uplands are characterized by associations of American beech (*Fagus grandifolia*), several oaks (*Quercus* spp.), and American holly (*Ilex opaca* var. *opaca*). Patches of drier oak-dominated forest and steep bluffs with dense forests of chestnut oak (*Quercus montana*, = *Quercus prinus*), beech, and mountain-laurel (*Kalmia latifolia*) are fairly common in the dissected inner Coastal Plain, especially north of the James River. South of the James River, fire-maintained forests and woodlands dominated by longleaf pine (*Pinus palustris*) may have been prevalent prior to European settlement (Frost 1995), but little trace of these now remains.

Terrestrial communities restricted to special inner Coastal Plain habitats include a few remnant longleaf pine and turkey oak (*Quercus laevis*) woodlands associated with deep sand deposits along the Nottoway and Blackwater Rivers in southeastern Virginia. Rare vegetation types have also developed on ravine slopes and estuarine-fronting bluffs that have down-cut into Tertiary

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shell deposits or limesands. Soils of the latter habitats have extraordinarily high levels of calcium and support a number of inland, calciphilic species that are disjunct from the mountains.

Wetlands of the Coastal Plain are extensive and have fared somewhat better than the province's upland forests, supporting a great variety of natural communities. The diversity of wetlands in this region spans a range of freshwater to saline, lunar-tidal estuaries; tidal and palustrine swamps; non-riverine, groundwater-saturated flats; seasonally flooded ponds and depressions; seepage slope wetlands; and various tidal and non-tidal aquatic habitats.

The maritime zone of the outer Coastal Plain is vegetated with a unique suite of pine and pine-hardwood forests, dune woodlands and scrub, and dune grasslands well adapted to deep, very dry sands; periodic salt spray; and oceanic storm impacts. Maritime-zone wetlands include some of the state's rarest natural communities, including sea-level fens, interdune ponds, and maritime swamp forests.

In addition to the distinctions between the inner and outer subregions of the Coastal Plain, phytogeographers (*e.g.*, Braun 1950) also tend to recognize "northern" and "southern" divisions of this province, with the James River serving as a rough boundary. South of the James, a number of southern species and vegetation types reach or approach their northern range limits. Ecological community groups wholly or largely restricted to the southern Coastal Plain are Longleaf Pine / Scrub Oak Sandhills, Pond Pine Woodlands and Pocosins, Bald Cypress - Tupelo Swamps, Non-Riverine Swamp Forests, and Peatland Atlantic White-Cedar Forests. Except in the maritime zone, the northern Coastal Plain generally lacks austral vegetation assemblages and contains upland and estuarine vegetation with more northern affinities

The preceeding section was adapted largely from Fleming (2012) and Weakley et al. (2012).

4.2 TERRESTRIAL VEGETATION

Terrestrial vegetation includes evergreen, deciduous, mixed evergreen-deciduous forests, and maintained open lands dominated by herbs, forbs, and grasses.

4.2.1 HISTORIC CONDITIONS

Historic terrestrial vegetation conditions on FAPH prior to Army acquisition are only approximations due to limited information and analysis available from that period. The dominant terrestrial vegetation types typical of FAPH circa 1941 included privately owned agricultural lands, herbaceous open lands in various states of succession, and young to mature forests (deciduous, evergreen, and mixed deciduous-evergreen) typical of the Coastal Plain for that period (Figure 4-1). The pre-1941 hardwood forest communities ostensibly consisted of oaks (*Quercus* spp.), hickories (*Carya* spp.), and tulip-poplar (*Liriodendren tulipifera*), while the pre-1941 evergreen forests likely consisted of loblolly pine (*Pinus taeda*), Virginia pine (*Pinus virginiana*), and / or a mixture of the two species based on the composition, structure, and age of

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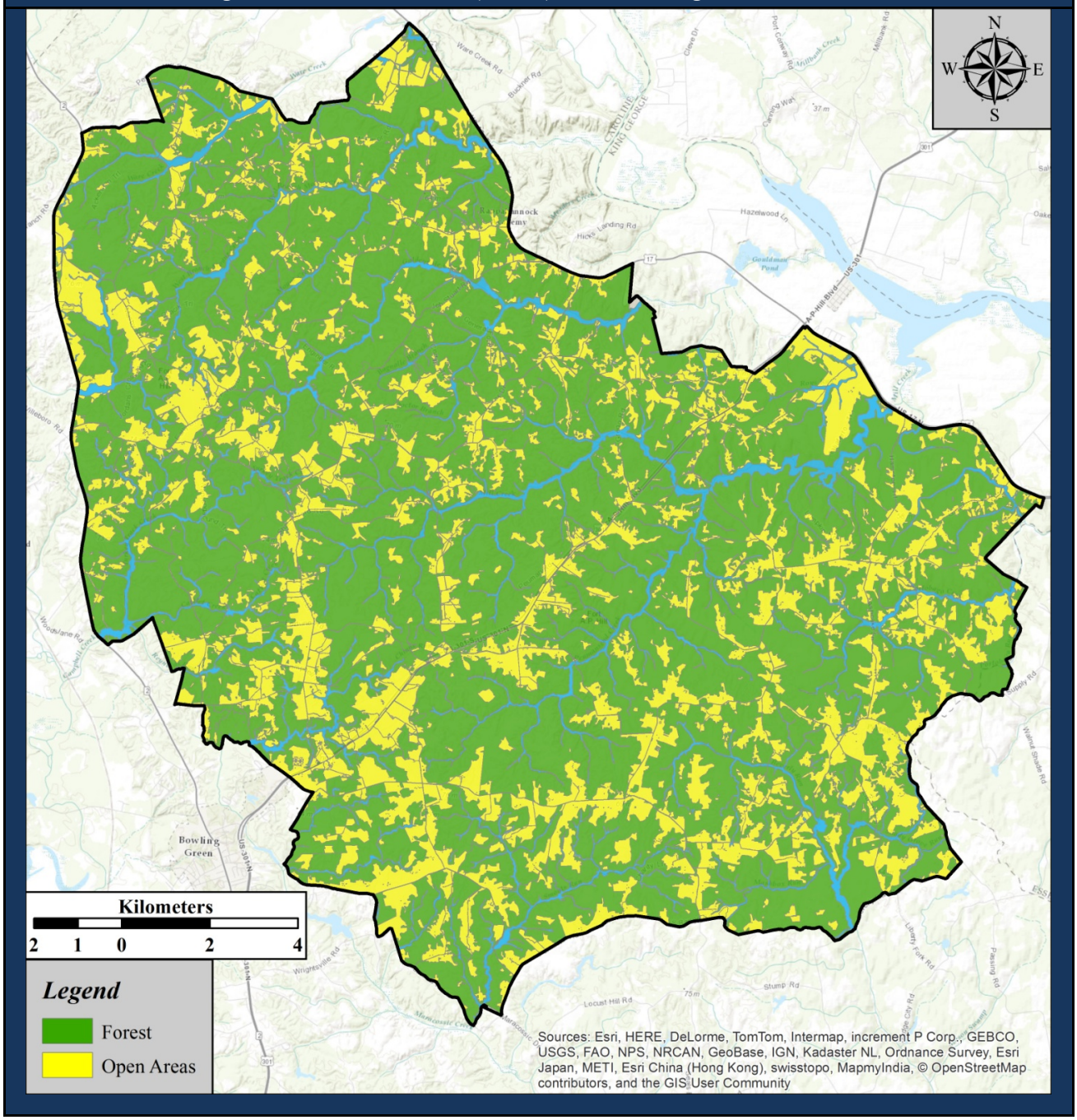
the current forest communities. Pre-1941 vegetation types on FAPH are estimated to be approximately two-thirds forested, one-quarter open agricultural lands, and 5% wetlands.

Figure 4-1. FAPH Historical (c. 1943) Terrestrial Vegetation Conditions



4.2.2 CURRENT CONDITIONS

Current terrestrial vegetation conditions on FAPH are diverse, representing 24 vegetation communities (Hazler and Taverna 2012) and encompassing approximately 72,000 acres (95%) of FAPH (Table 4-1, Figure 4-2). Forest communities are the dominant vegetation type (21 communities, 85% of the installation area, 65,000 acres) and can be generically grouped as evergreen, deciduous, and mixed evergreen-deciduous forest types; each forest type represents approximately one-third of the total forest cover on FAPH. Oaks, pines, and tulip-poplar are the most dominant species across these forest types with their degree of dominance varying by forest type and individual stand. Understory species vary considerably, but dogwood (*Cornus florida*), American holly (*Ilex opaca*), mountain laurel (*Kalmia latifolia*), and blueberry (*Vaccinium* spp.) are the most common. Forest management is a significant aspect of FAPH's land management strategy to support military training, conserve biodiversity, and fund ongoing forest management operations (See Chapter 7 of this INRMP). FAPH has approximately 5,000 acres of improved (turf and landscaping areas) and semi-improved open areas under varying management strategies. More information on the current condition and management of these areas is presented in subsequent chapters of this INRMP.

Table 4-1. FAPH Terrestrial Vegetation Communities

Vegetation Community Code/Label	Acres	% of FAPH Area
CEGL006075 - Mesic Mixed Hardwood Forest	13,869.9	18.6
COMP_SPHW - Successional Pine - Hardwood Forest	9,454.0	12.7
CEGL006269 - Coastal Plain Mixed Oak / Heath Forest	6,873.7	9.2
CEGL002591 - Successional Virginia Pine Forest	6,176.8	8.3
CEGL007179 - Loblolly Pine Planted Forest	5,403.1	7.2
CEGL004766 - Loblolly Pine - Mixed Oak Successional Forest	4,717.8	6.3
CEGL008462 - Loblolly Pine - Sweetgum Successional Forest	3,750.2	5.0
COMP_SUME - Successional Meadow / Grassland	3,671.4	4.9
CEGL007221 - Successional Acidic Tuliptree Forest	2,429.0	3.3
CEGL006599 - Successional Mixed Deciduous Vine-Forest	1,251.2	1.7
COMP_VISH - Successional Vine-Shrubland	1,202.4	1.6
CEGL003620 - Loblolly Pine Savanna	1,195.2	1.6
CEGL003722 - Oak / Hickory Woodland / Savanna	1,047.4	1.4

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Table 4-1. FAPH Terrestrial Vegetation Communities		
Vegetation Community Code/Label	**Acres**	**% of FAPH Area**
COMP_SLWP - Shelterwood Stand (Pine Canopy)	989.1	1.3
CEGL006919 - Oak - Beech / Heath Forest	625.5	0.8
CEGL008475 - Acidic Oak - Hickory Forest	445.2	0.6
COMP_SLWO - Shelterwood Stand (Oak Canopy)	401.2	0.5
NLCD82 - Cultivated Crops	198.8	0.3
CEGL007879 - Successional Black Walnut Forest	149.2	0.2
SF_FORS - Forested Open Space	128.7	0.2
CEGL007220 - Successional Basic / Circumneutral Tuliptree Forest	82.9	0.1
CEGL007216 - Successional Sweetgum Forest	78.5	0.1
COMP_AUOL - Autumn Olive Shrubland	70.0	0.1
CEGL006055 - Basic Mesic Hardwood Forest (Coastal Plain / Piedmont Type)	65.7	0.1
CEGL006299 - Chestnut Oak / Mountain Laurel Forest	0.3	0.0
TOTAL	**64,277.2**	**86.1**

Within these communities, FAPH has documented 565 native and non-native plant species within its jurisdiction (Appendix B); however, the Virginia Botanical Association (VBA 2013) reports 1,129 vascular plant species within Caroline County, which may be a closer representation of the botanical diversity of FAPH.

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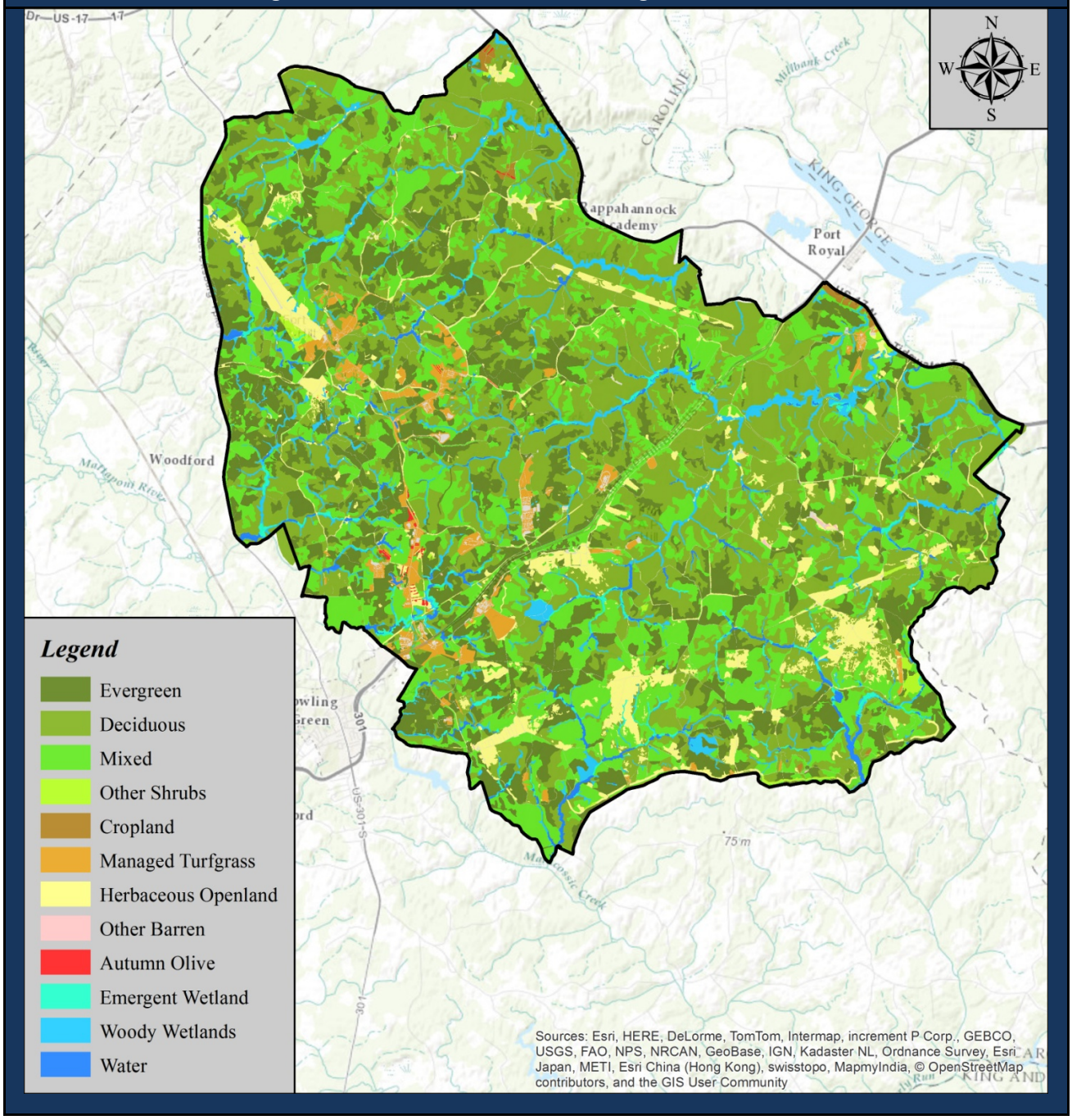
Figure 4-2. FAPH Current Terrestrial Vegetation Conditions



4.3 AQUATIC RESOURCES

Aquatic resources on FAPH include wetlands (palustrine and lacustrine), streams, floodplains, and riparian areas (See Chapter 12 of this INRMP). Aquatic resources provide a host of

ecologically important functions including, but not limited to: groundwater recharge, flood control, riparian protection, watershed protection, and providing important habitat for aquatic flora and fauna. In addition to the ecologically important functions listed above, aquatic resources are essential to the DOD for maintaining the military mission and quality of life for Warriors. The military uses its aquatic resources for amphibious training, water purification training, recreation, and as a drinking water supply. High water quality is necessary for all of these activities.

4.3.1 HISTORIC CONDITIONS

The historical distribution of streams and wetlands of FAPH prior to its inception in 1941 are uncertain but are considered largely consistent with their current distribution with two noteworthy exceptions: an increase in beaver (*Castor canadensis*) activity due to reintroduction in the 1960s and 1970s and the establishment of stream and wetland crossings associated with road construction to facilitate military maneuvers. The increase in road infrastructure from its inception through the 1980's has led to the creation of additional palustrine and lacustrine wetland resources.

4.3.2 CURRENT CONDITIONS

FAPH encompasses approximately 600 linear miles of intermittent/perennial streams, 790 acres of impoundments, and approximately 6,300 acres of wetlands (Table 3-3, Chapter 3). These aquatic resources drain either to the Lower Rappahannock River Watershed (HUC 02080104) and its tributaries to the north, or to the Mattaponi River Watershed (HUC 02080105) and its tributaries to the south. The Mattaponi River is located in the York River Watershed (HUC 02080107). Both the Rappahannock and York Rivers are located within the Lower Chesapeake Bay Watershed (HUC 02080101). FAPH is further subdivided into thirteen subwatersheds.

Aquatic resources data are managed using GIS datasets. These data sets are updated annually and are used to facilitate landuse planning and management decisions. Sources for updating aquatic resource data include the following:

a. Wetlands - U.S. Fish and Wildlife National Wetland Inventory and ground-truthed wetland delineations

b. Streams – U.S. Geological Survey National Hydrography Dataset and ground-truthed stream delineations

c. Riparian Areas – Data generated by buffering wetlands, streams, and impoundment data sets

d. Floodplains – Federal Emergency Management Agency Flood Insurance Rate Maps

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The protection and conservation of aquatic resources is a significant component of land management due to the installation's proximity to the Chesapeake Bay and all applicable federal and state laws and regulations pertaining to water quality (See Chapter 12). The FAPH ENRD is responsible for managing and ensuring the long-term sustainability of the aquatic resources located on the installation.

Table 4-2. Aquatic Vegetation Communities Present on FAPH *

Vegetation Community Code / Label	Acres	% of FAPH Area
CEGL006976 - Successional Red Maple Floodplain Forest	1,644.1	2.2
COMP_HEWE - Successional Herbaceous Wetland	1,208.5	1.6
CEGL004418 - Small Stream Sweetgum - Tuliptree Forest	1,162.3	1.6
COMP_WOWE - Successional Woody Wetland	689.6	0.9
CEGL006238 - Acidic Seepage Swamp	561.6	0.8
NLCD11 - Open Water	526.2	0.70
COMP_SEIM - Semipermanent Impoundment Aquatic Vegetation	380.4	0.5
COMP_PIWE - Successional Pine Wetland	251.7	0.3
CEGL006499 - Seepage Bog	3.8	0.0
CEGL006110 - Red Maple - Sweetgum Swamp	1.4	0.0
TOTAL	**6,429.6**	**8.6**

* Total acreage does not reflect the distribution or extent of jurisdictional wetlands

4.4 FISH AND WILDLIFE

FAPH's diversity of habitats supports an equally rich diversity of game and non-game wildlife species. Approximately 350 fish and wildlife species have documented occurrences on FAPH (Appendix C). Table 4-3 provides a reference summary of some of the fish and wildlife species more commonly found within FAPH. Fish and Wildlife management is conducted by DPW ENRD to the benefit of game and non-game species in a manner that supports the military mission (See Chapter 8).

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Table 4-3. Common Fish and Wildlife Species of FAPH	
Common Name	**Scientific Name**
Mammals	
White-tailed Deer	*Odocoileus virginianus*
Eastern Cottontail	*Sylvilagus floridanus*
Eastern groundhog	*Marmota monex*
Striped skunk	*Mephitis mephitis*
Raccoon	*Procyon lotor*
American Opossum	*Didelphis virginiana*
Red Fox	*Vulpes vulpes*
Grey Fox	*Urocyon cinereoargenteus*
Little Brown Myotis	*Myotis lucifugus*
Eastern Coyote	*Canis latrans*
Grey Squirrel	*Sciurus carolinensis*
Birds	
Great Blue Heron	*Ardea herodias*
Canada Goose	*Branta candensis*
Wild Turkey	*Meleagris gallopavo*
Northern Bobwhite	*Colinus virginianus*
Black Vulture	*Coragyps atratus*
Turkey Vulture	*Cathartes aura*
Red-tailed Hawk	*Buteo jamaicensis*
Mourning Dove	*Zenaida macroura*
Northern Cardinal	*Cardinalis cardinalis*
Field Sparrow	*Spizella pusilla*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Pileated Woodpecker	*Dryocpous pileatus*
Eastern Phoebe	*Sayornis phoebe*
Blue Jay	*Cyanocitta cristata*
Carolina Chickadee	*Poecile carolinensis*
White-breasted nuthatch	*Sitta caroliniensis*

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Common Name	Scientific Name
Fish	
Largemouth Bass	*Micropterus salmoides*
Black Crappie	*Pomoxis nigromaculatus*
Blue Gill	*Lepomis macrochirus*
Redear Sunfish	*Lepomis microlophus*
Flier	*Centrarchus macropterus*
Warmouth	*Lepomis gulosus*
Chain Pickeral	*Esox niger*
Brown Bullhead	*Ameiurus nebulosus*
Yellow Bullhead	*Ameiurus natalis*
Channel Catfish	*Ictalurus punctatus*
Bowfin	*Amia calva*
Golden Shiner	*Notemigonus crysoleucas*
Creek Chubsucker	*Erimyzon oblongus*
Yellow Perch	*Perca flavescens*
Reptiles and Amphibians	
Eastern Painted Turtle	*Chrysemys picta*
Snapping turtle	*Cheldra serpentina*
Eastern Box turtle	*Terrapene carolina*
Northern Fence Lizard	*Sceloporus undulatus*
Five-lined skink	*Eumeves fasciatus*
Northern red salamander	*Pseudotriton ruber*
Spotted salamander	*Ambystoma maculatum*
Eastern American Toad	*Bufo americanus*
Bullfrog	*Rana catesbeiana*
Northern copperhead	*Agkistrodon contortrix*
Black rat snake	*Elaphe obsoleta*

4.5 WILDLAND FIRE

Wildland fire is a significant natural occurrence within the Eastern U.S. and Mid-Atlantic Coastal Plain - one that has historically maintained the species composition and habitat types

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endemic to the area (USDA 2014). Many of the biotic communities found on FAPH are dependent upon wildland fire to propagate and maintain current species compositions. Military training activities will also periodically generate wildfires from the use of pyrotechnics and incendiary munitions. Consequently, wildland fire, both unintentional wildfires and deliberately ignited prescribed burning as a management tool, is a significant aspect of land management and ecological disturbance that is managed to ensure the life, health, and safety of installation personnel and the surrounding community, the sustainment of the military mission, and the conservation of biodiversity.

Prescribed burning is typically conducted from October – December and February – April as a land management tool to control and maintain desired vegetation conditions and reduce fuel loads in areas prone to wildfires (i.e., the Live-fire Range Complex). On average, FAPH has an annual prescribed burn goal of approximately 30,000 acres. Due to weather, resource availability and the primacy of land use for military training, that goal is challenging to achieve in any given year. More information on prescribed burning is presented in Chapter 7 (Forest Management) and the FAPH Integrated Wildland Fire Management Plan (Appendix E).

4.6 THREATENED, ENDANGERED, AND AT-RISK SPECIES

FAPH currently harbors two federally listed wildlife species, two federally listed plant species, two state-listed species, and four DOD-designated Species-At-Risk (SAR). SARs are rare species that are not currently listed under the Endangered Species Act but are considered likely to be listed in the future based on their rarity and population trends. The DOD directs installations to proactively include the conservation of SARs into long-term natural resources management to ensure installations would not become encumbered in the event the species is listed in the future (NatureServe 2011). Detailed information on the conservation and management of threatened, endangered, and at-risk species is provided in Chapter 9 of this INRMP.

4.7 OTHER NATURAL HERITAGE RESOURCES

4.7.1 FLORA AND FAUNA SPECIES

FAPH also harbors 23 species that are rare to the Commonwealth of Virginia, but are not listed at the federal or state level (Table 4-4).

Table 4-4. FAPH Rare Species List

Species	Subtype	Global Rank	State Rank	General Habitat
Callophrys irus (Frosted elfin)	Butterfly	G3	S2	Grasslands

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Table 4-4. FAPH Rare Species List				
Species	**Subtype**	**Global Rank**	**State Rank**	**General Habitat**
Celithemis (Martha's pennant)	Dragonfly	G4	S2	Wetlands
Digitaria cognata (Mountain hairgrass)	Graminoid	G5	S2	Grasslands / Wetlands
Epitheca spinosa (Robust baskettail)	Dragonfly	G4	S2	Wetlands
Helenium brevifolium (Shortleaf sneezeweed)	Forb/Herb	G4	S2	Wetlands
Heliocordulia selysii (Selys' sundragon)	Dragonfly	G4	S2/S3	Wetlands
Kalmia angustifolia (Sheep laurel)	Shrub	G5	S2	Forest
Nannothemis bella (Elfin skimmer)	Dragonfly	G4	S1	Wetlands
Nehalennia gracilis (Sphagnum sprite)	Damselfly	G5	S2	Wetlands
Potamogeton oakesianus (Oakes' pondweed)	Forb/Herb	G4	S2	Wetlands
Rhynchospora alba (White beakrush)	Graminoid	G5	S2	Wetlands
Sabatia campanulata (Slender marsh pink)	Forb/Herb	G5	S2	Wetlands
Sarracenia purpurea ssp. purpurea (N. purple pitcher plant)	Forb/Herb	G5/T5	S2	Wetlands
Schoenoplectus subterminalis (Water bulrush)	Graminoid	G4/G5	S1/S2	Wetlands
Siren intermedia (Lesser siren)	Amphibian	G5	S2	Wetlands
Solidago uliginosa var. uliginosa (Bog goldenrod)	Forb/Herb	G4/G5/T4/T5	S2	Grasslands / Wetlands
Somatochlora filosa (Fine-lined emerald)	Dragonfly	G5	S2	Wetlands
Somatochlora provocans (Treetop emerald)	Dragonfly	G4	S2	Wetlands
Sphagnum strictum (Straight peatmoss)	Non-Vascular	G5	S2	Wetland
Sphyrapious varius (Yellow-bellied sapsucker)	Bird	G5	S1B/S4N	Forests

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Table 4-4. FAPH Rare Species List				
Species	**Subtype**	**Global Rank**	**State Rank**	**General Habitat**
Stygobromus indentatus (Tidewater amphipod)	Crustacean	G3/S3	-	Streams / Seeps
Thelypteris simulata (Massachusetts or Bog fern)	Forb/Herb	G5	S1/S2	Forested wetlands
Utricularia purpurea (Purple bladderwort)	Forb/Herb	G5	S2	Wetlands

4.7.2 CONSERVATION SITES, UNITS, AND NATURAL COMMUNITIES

Due to the diversity of FAPH's landscape, vegetation, and species assemblages, the Virginia DCR-DNH has identified 28 Natural Heritage Conservation sites denoting significant ecological features such as high quality rare habitats and or occurrences of federal or state listed species (Figure 4-3).

The Virginia Department of Conservation and Recreation (DCR)-DNH has also identified three Stream Conservation Units that represent high quality habitat and associated buffers associated with rare aquatic species (VDCR 2013).

Seventeen terrestrial or aquatic natural community assemblages constitute ecologically unique or significant communities due to the dominant species occurrences and/or inherent structural composition absent the occurrence of federally listed species. These communities are managed in accordance with DOD guidance as Special Natural Areas (SNA) (DODI 4715.03) which are managed to ensure their ecological uniqueness. SNAs are not off-limits to military training; indeed pine savanna communities are maintained in large part by wildland fire disturbance associated with live-fire training and the prescribed burn program (Van Alstine *et al.* 2010). Many of the SNAs are late seral old-growth forests, typically encompassing slopes and wetland terrain features. Though ecologically significant, several of the SNAs require ecological restoration to ensure their long-term sustainability due to invasive species and deviations from a historic disturbance regime or changes in species and / or structural composition. Any restoration of these communities shall be conducted in accordance with guidelines established by the Society for Ecological Restoration.

Since FAPH harbors such a diversity of species, habitats, and communities, it is a biodiversity hotspot in the eastern coastal plain of Virginia, on par with the Great Dismal Swamp National Wildlife Refuge (Figure 4-4)(VCLNA 2005).

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Figure 4-3. VA DCR-DNH Natural Heritage Conservation Sites on FAPH

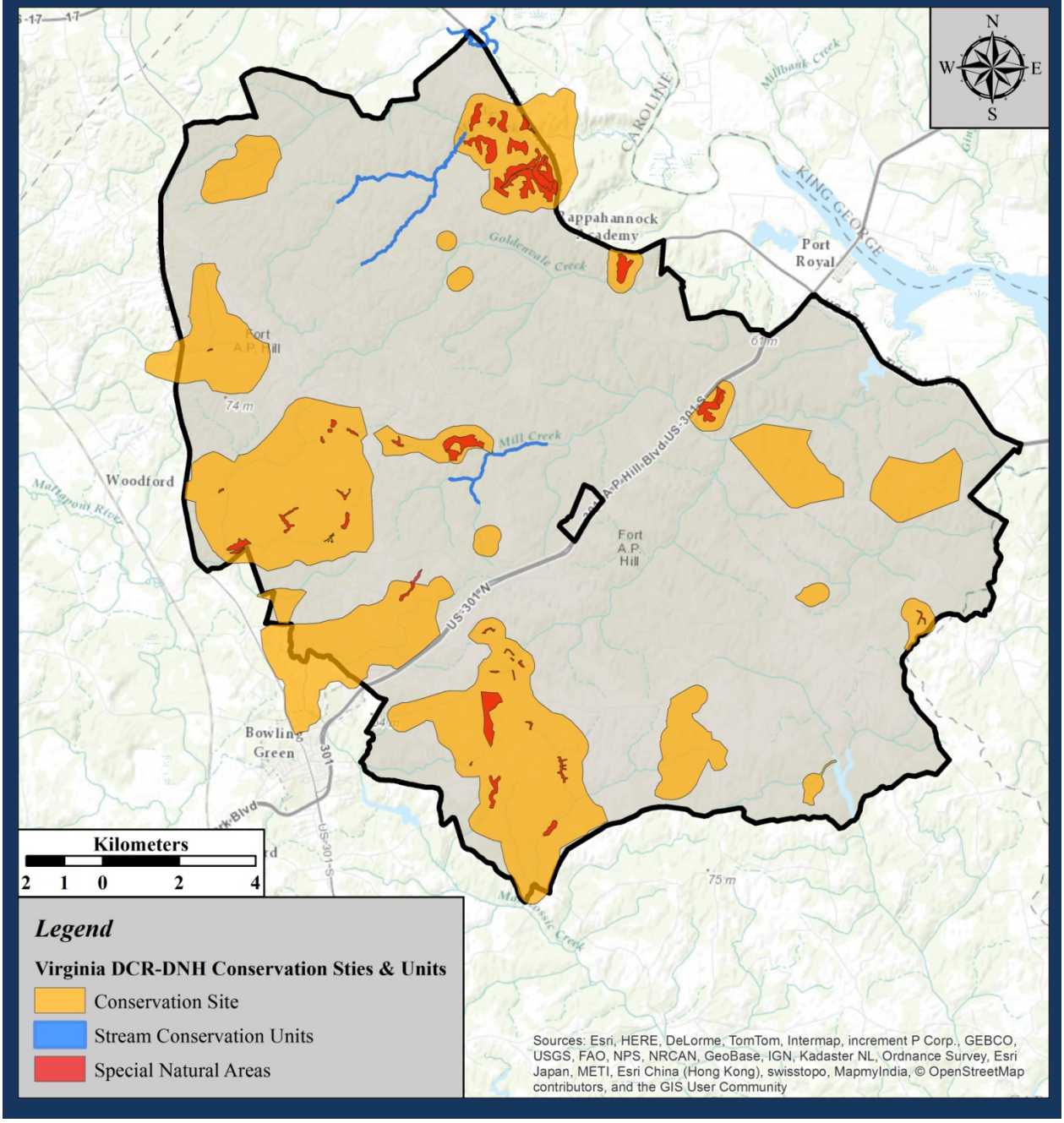

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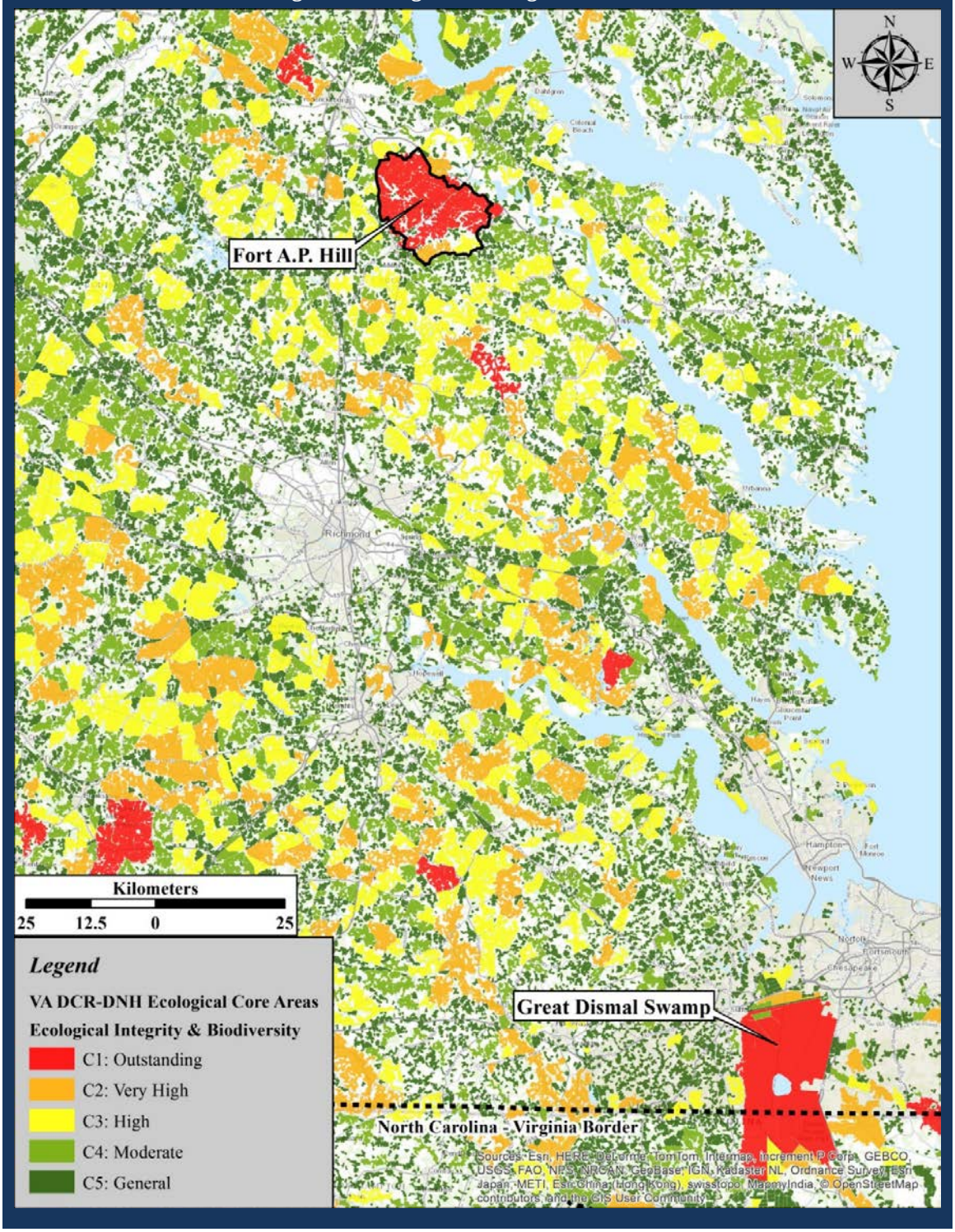
Figure 4-4. Regional Ecological Core Areas



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5.0 MISSION IMPACTS ON NATURAL RESOURCES

5.1 LAND USE

FAPH has 75,794 acres of land supporting approximately 47,000 acres of mounted / dismounted maneuver space and approximately 28,000 acres of live-fire ranges. As a Regional Collective Training Center, FAPH trains the Joint Force, but more than half of the units that train on FAPH annually are Army (Active or Reserve Components) (Table 5-1).

Table 5-1. Transient Military Training at FAPH *

Component	Utilization (+/-)
U.S. Army (Active Component)	50%
U.S. Army (Reserve Component)	37%
Other DOD Service Branches	12%
Other Federal Entities / Agencies	1%
Non-Federal Entities /Agencies	1%
TOTAL	**100%**

* as of June 2014

5.2 CURRENT IMPACTS

When projects, initiatives, or requirements are identified, mission effects to natural resources are detailed in several National Environmental Policy Act (NEPA) documents that are generated either by the project proponent, FAPH DPTMS, or Army Higher Headquarters. In accordance with all applicable regulations, FAPH implements management controls (policies, practices, and procedures) which aim to conserve natural resources and avoid, limit, and/or mitigate any negative military mission impact to these resources. Without management controls, military training has the potential to inflict damage to natural resources (Table 5-2).

Table 5-2. Summary of Potential Impacts to Natural Resources Absent the Management Controls Described in this INRMP

Natural Resource	Potential Negative Effect
Water (Streams & Wetlands)	• Pollutant (e.g., gasoline, oil) contamination • Sedimentation (from soil erosion) • Impaired/Loss of functionality • Conversion of wetland • Spread of invasive aquatic plant species
Land / Soils	• Hazardous Materials • Hazardous Waste • Pesticides • Solid Waste & Recycling • Loss of soil biota/productivity • Erosion/Soil displacement
Air	• Air Quality (Emissions) • Noise • Fugitive Dust

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Table 5-2. Summary of Potential Impacts to Natural Resources Absent the Management Controls Described in this INRMP	
Natural Resource	**Potential Negative Effect**
Vegetation	• Loss or conversion of vegetation communities • Spread of invasive plant species • Increased risk for wildfires
Fish & Wildlife	• Loss/conversion of habitat • Spread of invasive plant species • Increased risk for wildfires • Losses in individuals • Declines in species populations • Wildlife/Vehicle Collisions
Endangered Species	• Incidental take • Loss/conversion of habitat • Spread of invasive plant species • Increased risk for wildfires • Declines in populations
Cultural Resources	• Artifact destruction • Physical degradation of architectural/ archeological

Not all impacts from military training can be negative. Positive impacts from military operations and supporting land management activities include the maintenance of unique ecological communities that are primarily associated with an increased frequency of wildland fire compared to contemporary vegetation communities in the region. Specifically, the duded impact areas have a unique grassland / savanna vegetative composition due to the frequency of disturbance from military munitions and wildland fire heavily influenced by incendiary munitions (Fleming *et al.* 2013). This area is optimal habitat for bobwhite quail which is a species on the decline in this region of Virginia, primarily due to loss of quality habitat. Additionally, seepage bog communities are maintained by fire to prevent overgrowth of trees and shrubs. The elimination of fire as an ecological process has allowed many former bogs to become overgrown with shrubs and trees. Good examples of seepage bog habitats remain in military base training ("impact") areas including FAPH where habitats have been subject to frequent incendiary burning for at least 50 years. A large number of state-rare plants and several state-rare odonates (dragonflies and damselflies) are associated with seepage bogs (Fleming *et al.* 2013).

5.3 POTENTIAL FUTURE IMPACTS

In order to meet mission requirements for maneuver, direct fire, indirect fire, and native biodiversity sustainability, FAPH faces a unique management challenge as existing vegetation communities transition to more compositionally and structurally diverse communities with larger spatial assemblages. Conversely, some current vegetation communities may shift to accommodate range and facility development that is needed to ensure sustained military readiness. Enhancement of existing training areas and/or the introduction of new training

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missions are two ways that vegetation communities and/or aquatic resources could be affected in the foreseeable future. Succeeding chapters of this INRMP provide more information about vegetation management in support of military training operations.

5.4 REQUIRED NATURAL RESOURCES MANAGEMENT FOR MISSION SUPPORT

Natural resources needed to support the military mission include:

a. Semi-open forests/woodlands

b. Stable soils

c. Open (non-treed) maneuver space

d. Moderate and densely wooded areas

e. Streams and wetlands

f. Clean air

g. Clean groundwater

Areas with impaired air or water quality are less able to accommodate additional emissions or discharges from military testing and training and may degrade the realism of the training activity. Maneuver training and direct/indirect live-fire capabilities are the primary motivations for developing site-specific management prescriptions for vegetated areas.

5.5 NATURAL RESOURCE CONSTRAINTS TO MISSION AND MISSION PLANNING

Statutory requirements to manage and safeguard protected species, wetlands, and / or ecologically significant / unique habitats can constrain military land use depending upon the applicable regulatory procedures. The constraints may be year-round or seasonal, and they may involve lengthy consultation periods with regulatory agencies before a military mission can be conducted; additional costs may be incurred for professionals to survey for protected species and / or assess impacts to land and water during the mission. Even the loss of protected species or important habitats in the immediate vicinity of FAPH by non-military factors could place constraints on the military mission by increasing the natural resource management responsibilities of the installation. As natural resources are depleted outside of the installation, those resources within the reservation boundary become more valuable to species, and the Army may be required to manage their resources more carefully.

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6.0 NATURAL RESOURCES MANAGEMENT: REGIONAL AND ADMINISTRATIVE CONTEXT

6.1 REGIONAL LANDSCAPE CONTEXT AND MILITARY MISSION SUPPORT

6.1.1 MANAGEMENT ETHOS

It is DOD policy to implement an environmental management strategy that goes beyond compliance with statutory laws and regulations towards a strategy of sustainability. The DOD adopted Sustainability as a goal and Environmental Management Systems (EMS) as the holistic programmatic approach towards implementation and integration of environmental policy. Consequently, Sustainability and EMS are integrated into a Sustainable Environmental Management System (SEMS) on FAPH to ensure that all environmental impacts from the facility are identified and conducted in a manner consistent with all applicable federal, state, and local laws and regulations.

FAPH's Environmental Policy objectives are to comply with the law

a. Regulatory compliance

b. Proper disposal

c. Promote community awareness

and consider the environment in all operations

a. Follow sound environmental practices in operations

b. Pollution prevention

c. Waste minimization

d. Reduce

e. Reuse

f. Recycle

FAPH's ENRD has identified 28 environmental aspects that are addressed in the daily business practices of the installation (Figure 6-1). The Natural Resources Program builds upon the sustainability ethos and EMS to implement ecosystem-level management of natural resources in accordance with all federal and state laws (Table 6-1).

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Figure 6-1. FAPH Environmental Aspects

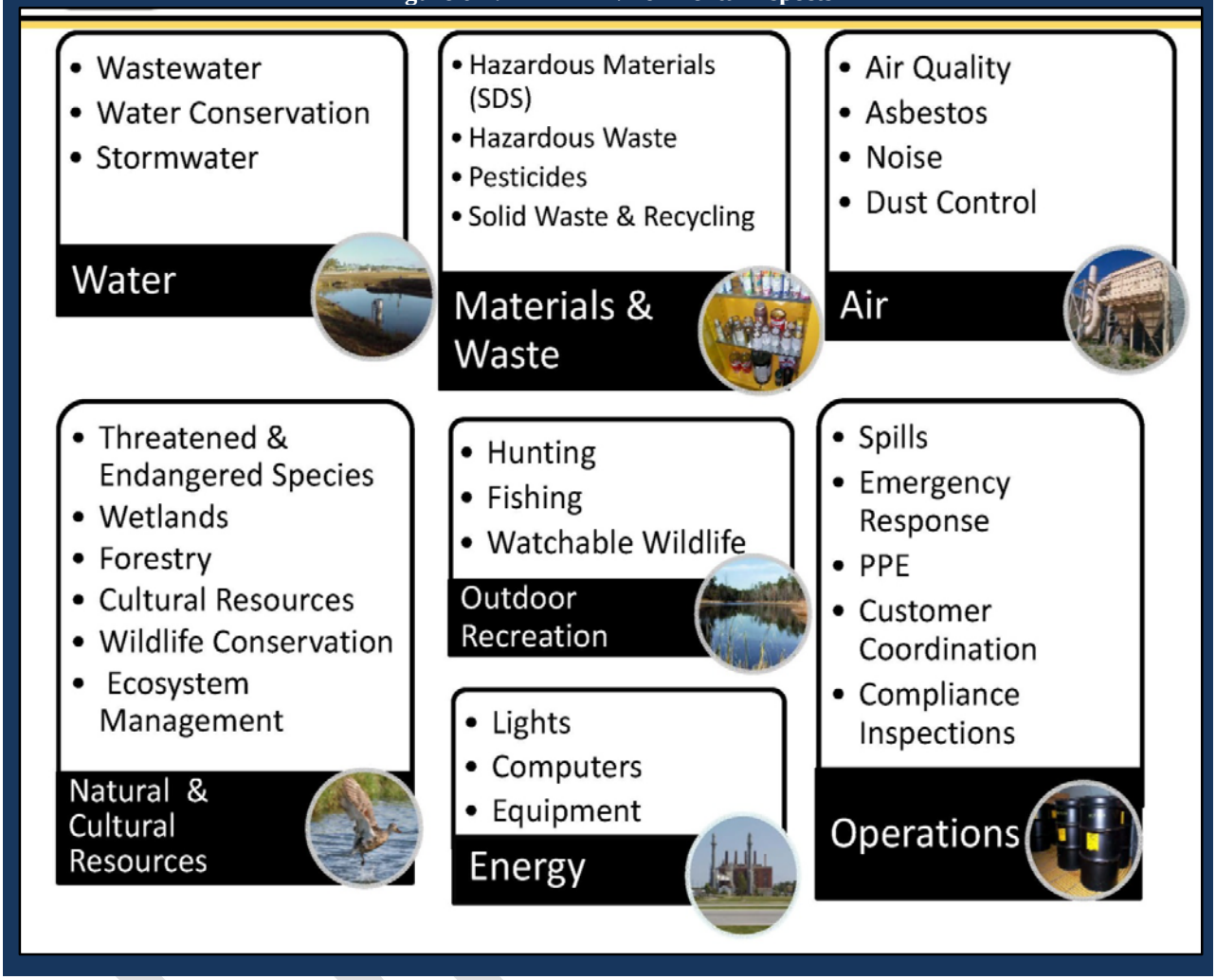

Table 6-1. Laws, Regulations, Directives, and Guidance which guide the Natural Resources Management Program Ethos on FAPH *

Federal
The Readiness and Environmental Protection Initiative (10 U.S.C. Sec. 2684)
The Endangered Species Act, *as amended* (16 U.S.C. Sec 3371 et seq. / 50 CFR 17; 50 CFR 402)
The Sikes Act *as amended* (16 U.S.C. 670 et seq.) / 32 CFR 190)
The National Environmental Policy Act (42 U.S.C. Sec. 4321 et seq. / 40 CFR 1500)
32 CFR 651, *Environmental Analysis of Army Actions*
The Clean Water Act, *as amended* (33 U.S.C Sec. 1251 et seq.)
Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management (65 Fed. Reg. 62566-01)

Federal (con't.)
Executive Order 11472 – *Establishing the Cabinet Committee on the Environment and the Citizens Advisory Council on Environmental Quality, as amended* (34 Fed. Reg. 8693)
Executive Order 12906 - *Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure* (59 Fed. Reg. 17671)
Executive Order 13443 – *Facilitation of Hunting Heritage and Wildlife Conservation* (72 Fed. Reg. 46537)
Executive Order 13508 - *Chesapeake Bay Protection and Restoration* (74 Fed. Reg. 23099)
Executive Order 13693 – *Planning for Federal Sustainability in the Next Decade* (80 Fed. Reg. 15871)
DOD
DOD Directive 3020.40 – *DOD Policy and Responsibilities for Critical Infrastructure*
DOD Instruction 4715.17 - *Environmental Management Systems*
DOD Instruction 4715.03 - *Natural Resources Conservation Program*
DOD Instruction 4715.16 - *Cultural Resources Management*
Conserving Biodiversity on Military Lands: *A Guide for Natural Resource Managers*
U.S. Army
Army Regulation 350-52, *Army Training Support System*, 17 January 2014
U.S. Army Installation Management Command Campaign Plan (2012-2020)
U.S. Army Strategy for the Environment
U.S. Army Chesapeake Bay Strategy
Army Regulation 200-1 - *Environmental Quality: Environmental Protection and Enhancement*
Army Regulation 215-1 – *Military Moral, Welfare and Recreation: Military Morale, Welfare, and Recreation Programs and Non-appropriated Fund Instrumentalities*
Army Regulation 115-13 – *Geospatial Information and Services*
IMCOM Policy Memorandum 11-32-1 - *Operationalizing Sustainability*, dated 25 May 11
Army Techniques Publication 3-34.80- *Geospatial engineering*
Army Techniques Publication 3-37.34 – *Survivability Operations*
Army Techniques Publication 2-01.3 - *Intelligence Preparation of the Battlefield / Battlespace*
Fort A.P. Hill
Strategic Action Plan
Range Complex Master Plan
ITAM Annual Workplan
Integrated Cultural Resources Management Plan (Appendix D)
Watershed Management Plan (Appendix H)

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Fort A.P. Hill (con't.)
Integrated Pest Management Plan (Appendix I)
Master Plan (Long Range Component)
Commonwealth of Virginia
Virginia Wildlife Strategic Action Plan
Virginia Department of Forestry Strategic Plan 2010
Virginia Department of Conservation and Recreation Natural Heritage Plan
* see Appendix A for a full list of applicable laws, regulations, directives, and guidance

6.1.2 WATERSHED-LEVEL MANAGEMENT

It is the policy of the federal government to implement watershed-level management of natural resources on federal lands in recognition of the significance hydrology has on the terrain and vegetation aspects of natural communities (USACE 2000). FAPH evaluates its natural resources and military mission requirements and potential for impacts at the watershed and sub-watershed level. More information on watershed management can found be found in Chapter 12 and Appendix 12.

6.1.2.1 THE CHESAPEAKE BAY LOWLANDS

The installation's location within the Chesapeake Bay Lowlands has a significant influence on how the installation implements natural resources management due to the federal and interagency requirements associated with the restoration of the Chesapeake Bay Watershed. Specific to this effort is the establishment, retention, and enhancement of vegetated riparian buffers around streams and wetlands to maintain high water quality and healthy biotic communities and the implementation of management controls to this effect.

6.1.3 REGIONAL LANDSCAPE

The landscape setting of FAPH both within the installation's boundaries and the regional context of the surrounding landscape are significant factors in natural resources management. The surrounding regional context drives programmatic strategy due to resource considerations that transcend jurisdictional boundaries and municipalities (e.g., state wildlife management plans, migratory species conservation).

6.1.3.1 MID-ATLANTIC REGION

The installation's location within the Mid-Atlantic Region forms the ecological context of the larger landscape. Commonalities in climate, physiography, biological communities, and invasive

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species across states in this region provide a continuity of management prerogatives and concerns among the various federal, state, and no-profit entities that can be examined and considered for applicability to natural resources management on FAPH.

6.1.3.2 COMMONWEALTH OF VIRGINIA

FAPH implements natural resources management within its jurisdiction commensurate with the Commonwealth of Virginia's natural resources management priorities. The Virginia Department of Game and Inland Fisheries, The Virginia Department of Forestry, The Virginia Department of Agriculture and Consumer Services, and the Virginia Department of Conservation and Recreation are the primary State Agencies responsible for natural resources management within the Commonwealth that most closely align with the natural resources present on FAPH. Their strategic and operational plans and guidance are incorporated into natural resources management and land management as appropriate, subject to military mission requirements.

6.1.3.3 VIRGINIA PHYSIOGRAPHIC PROVINCES

FAPH is located entirely within the Mid-Atlantic Coastal Plain physiographic province and the northern half of the phytographic zone of the Inner Coastal Plain sub-province. This physiographic juxtaposition explains the diversity of natural communities present on the Installation (see Chapter 4 of this INRMP).

6.1.4 DOD CONSERVATION METRICS

All natural resources management initiatives and projects undertaken on FAPH per this INRMP are implemented to support seven DOD Conservation Metrics for natural resources management (See Chapter 1 of this INRMP). An annual review of completed versus planned natural resource management activities and projects shall be conducted at the end of each fiscal year and communicated to the USFWS and the VDGIF.

6.1.5 PARTNERSHIPS AND REGIONAL INITIATIVES

Natural resources management on FAPH utilizes short-term and long-term partnerships with federal, state, academic, and/or non-profit organizations to accomplish specific INRMP objectives on a per project basis when possible, as appropriate.

6.2 ARMY COMPATIBLE USE BUFFER PROGRAM

The DOD has long recognized that civilian population growth and land development external but proximal to military installations can negatively impact the training and testing missions of those installations by degrading the quality, accessibility, and availability of training assets, facilities, and associated resources due to citizen concerns over operational noise, smoke/fugitive dust dispersion, spectrum (i.e. frequency) interference, and traffic congestion. Limiting the extent,

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frequency, and/or duration of training to accommodate the concerns of nearby residents has the potential to encroach on the operational readiness of DOD installations by degrading the quality (i.e., real-worldness) of the training activity. The Readiness and Environmental Protection Initiative (10 U.S.C. § 2684a), authorizes the DOD to enter into Cooperative Agreements with state agencies, private entities, and non-governmental organizations, to permanently protect open space from incompatible development in order to pre-empt future encroachment issues at DOD installations.

FAPH's ACUB program operates as a regional partnership program within the Lower Rappahannock River Basin to permanently protect approximately 33,000 acres of open space from incompatible development within its Focus Area to ensure FAPH's ability to meet current and future mission requirements (Figure 6-2). The Rappahannock River Corridor to the east of FAPH is an ecologically and culturally diverse area supporting habitat for numerous species, including those listed as threatened or endangered at the federal or state level, and numerous cultural/historic sites and properties due to its association with the early European explorations in North America. Consequently, a variety of federal and state entities with a mission to protect natural and / or cultural resources in this area partner and / or benefit from FAPH's ACUB Program, including:

a. The Commonwealth of Virginia

b. The National Park Service

c. The Virginia Department of Historic Resources

d. The U.S. Fish and Wildlife Service

e. The Virginia Department of Game and Inland Fisheries

f. The Conservation Fund

g. The Trust for Public Land

h. The Northern Neck Land Conservancy

i. The Natural Resources Conservation Service

By partnering with these agencies, FAPH is able to leverage expertise and funding to more effectively meet the objectives of the ACUB program while simultaneously supporting other federal, state, or non-profit conservation objectives in the region. Significant multi-jurisdictional accomplishments to date include the establishment of the Mattaponi Wildlife Management Area and permanent protection of the nationally significant Camden Historic Farm.

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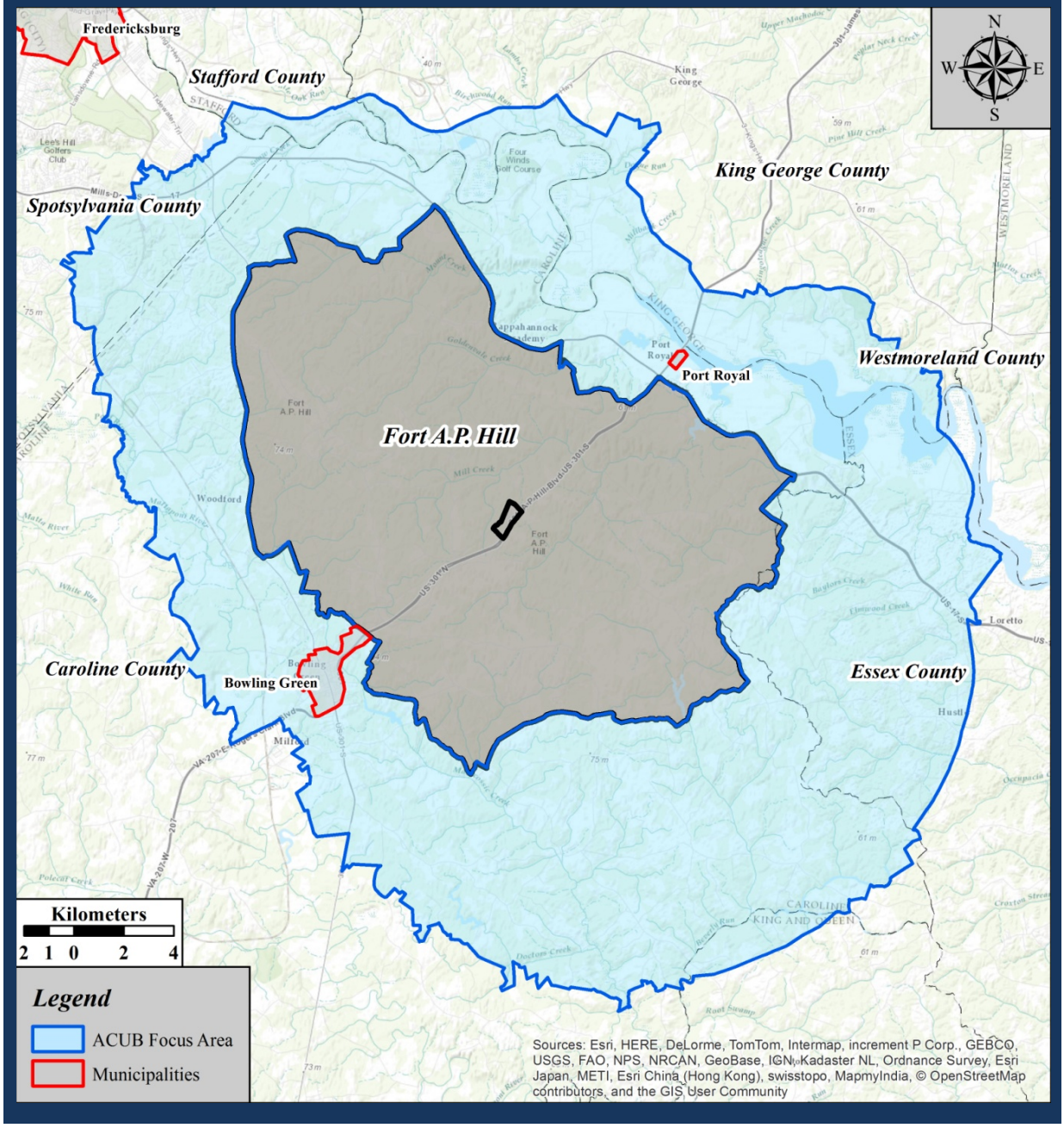
Figure 6-2 FAPH ACUB Focus Area

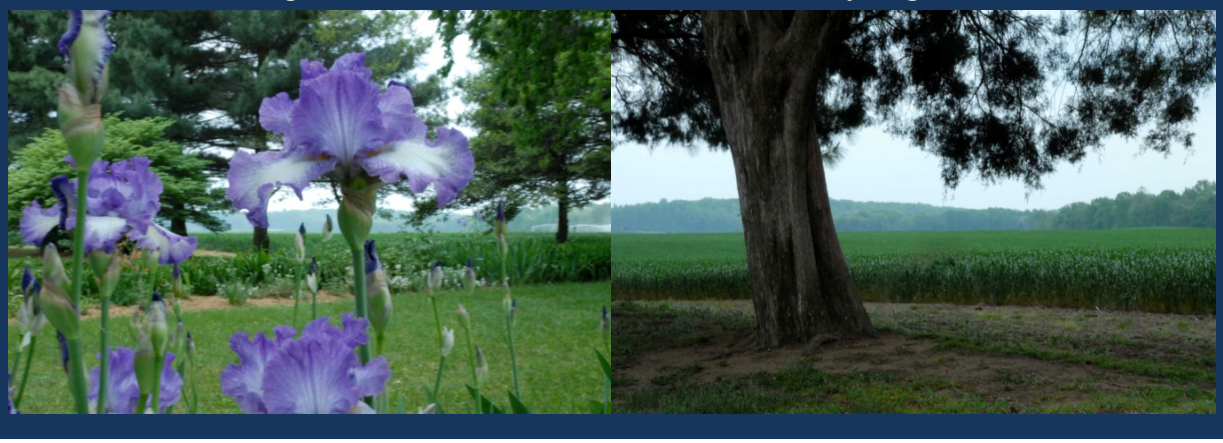


VDGIF's Mattaponi Wildlife Management Area (MWMA) was created in 2011 through the acquisition of 2,500 acres of commercial forest land by leveraging funds from within VDGIF, the USFWS, FAPH (via ACUB), and Ducks Unlimited. This partnership permanently protects 2,500 acres of land from residential development in close proximity to the installation and secures this land as open space for use in outdoor recreational activities such as canoeing,

hunting, and hiking. Through this effort, FAPH secured the rights to restore, create, and enhance streams and wetlands on the MWMA pursuant to all applicable federal regulations.

Figures 6-3. Mattaponi Wildlife Management Area, Caroline County, Virginia

Figure 6-4. Historic Camden Farm, Caroline County Virginia



The historic Camden Farm is located on the shores of the Rappahannock River proximal to FAPH. This historic property has been owned by a single family for more than 200 years with the 18th century mansion on the National Register of Historic Places. The 750-acre property

along the shores of the Rappahannock River contains numerous cultural sites dating from the contact period between the Nanzattico, Rappahannock, and Portobago tribes and European settlers. FAPH's ACUB program was used to acquire a conservation easement on 500 acres of this property as compensatory mitigation for impacting cultural sites on base to support Base Realignment and Closure (BRAC) actions in 2005. This off-site mitigation for cultural resources was the first time the DOD utilized this alternative approach to support military readiness, garnering several awards for the effort.

6.3 INTEGRATION WITH MILITARY MISSION REQUIREMENTS

FAPH's largely undeveloped landscape provides Warfighters with a variety of maneuver space and range facilities, which support training under diverse terrain and vegetation conditions. This large landscape must, however, be actively managed to ensure that those training on FAPH have access to high quality training assets and that terrain (i.e. vegetation and landform) conditions meet all doctrinal training requirements. The vegetation, physical, and structural composition of the landscape has significant effects on a variety of training activities that an environment can support. The physiognomy of species assemblages and community types can (1) facilitate, enhance, or deter/inhibit military maneuvers depending upon the species, density, and vertical/ horizontal distribution of the vegetation, (2) decrease line of sight between stationary targets or between forward observers and their targets, and (3) increase the risk for wildfires in the presence of incendiary munitions.

6.3.1 MANAGING FOR MANEUVER SPACE

Quantifying, assessing, and determining the extent terrain features impede or facilitate the successful completion of a mission is a key part of the Intelligence Preparation of the Battlefield Process that all units need to complete as part of their training mission. Terrain features can enhance or negatively affect the following factors relevant to military operations (U.S. Army 1994):

a. Observation and fields of fire

b. Concealment and cover

c. Obstacles

d. Key terrain

e. Avenues of approach

In forests and woodlands, the size and spacing of trees and the screening effects (i.e., concealment) of braches, stems, and foliage can significantly influence the accessibility and

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quality of the training environment. For mounted maneuvers (i.e., tactical vehicle-based training) in a wooded or forested environ, trees/clusters of trees must be avoided over the course of the training mission; the difficulty of avoidance, frequency of avoidance, and maximum sustained vehicle speed affect the overall quality of the training. The effect of tree spacing on tactical vehicle performance is largely influenced by the speed at which avoidance can be accomplished. Uncontrolled or unmanaged vegetation can significantly restrict the capabilities of units to conduct cross-country maneuvers. Vegetation encroachment along trails and dedicated open maneuver space limits the type, frequency, extent, and duration of training missions that can be completed as well as pose a safety risk due to limited visibility. If left unmanaged, encroachment has the potential for the long-term decline in the availability of training resources. Consequently, forests, woodlands, shrublands, and open areas are managed by installation land management programs to provide maneuver space for mounted and dismounted full spectrum training operations of the joint force (all service branches).

Figure 6-5. Forest Thinnings to Facilitate Cross-Country Maneuvers

Terrain features are an inherent element in the utilization of camouflage, concealment, and decoys as they can blur or conceal the signatures of military activity through recurring terrain patterns (e.g., agricultural, urban, wooded). Forests provide the best type of natural screen against optical reconnaissance especially if the tree crowns are wide enough apart to prevent aerial observation. Coniferous forests are more effective at concealment than deciduous forests as the crowns are green year-round. Specific land management practices used to manage maneuver space are addressed in Chapters 7 (Forest Management), Chapter 8 (Fish & Wildlife Management), Chapter 13 (Grounds Maintenance), and Chapter 15 (ITAM). Any application of herbicide to re-establish or maintain maneuver space shall be conducted in accordance with all applicable federal and state laws, DOD and Army guidance, and Fort A.P. Hill's Integrated Pest Management Plan (Appendix I).

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6.3.2 MANAGING FOR LINE-OF-SIGHT

Uncontrolled or unmanaged vegetation can significantly restrict the visibility and capabilities of units conducting indirect fire (mortars and artillery) or even direct fire. This can be a significant detriment to the efficiency, effectiveness, and safety of units' training; in addition, there is unacceptable potential for the long-term decline in the availability of this training resource if left unmanaged. Limited line of sight during training can significantly limit the capabilities of a unit during weapons qualification and skill development. FAPH incorporates this consideration in its land management practices.

Managing vegetation to maintain or increase line-of-sight requires integration among the various functional elements within DPW and DPTMS and utilizes mechanical, chemical, and pyrological techniques, singly or in combination to achieve desired effects. Managing for line-of-sight is particularly challenging in the Range and Impact Areas due to the presence of unexploded ordnance thus requiring extensive planning and coordination among stakeholders. Any application of herbicide to re-establish or maintain maneuver space shall be conducted in accordance with all applicable federal and state laws, DOD and Army guidance, and Fort A.P. Hill's Integrated Pest Management Plan (Appendix I).

6.3.3 MANAGING FOR OPTIMAL AVAILABLITLY OF FACILITIES

FAPH's 28,000-acre live fire Range Complex is heavily vegetated with forests and herbaceous open lands. Live-fire munitions have incendiary potential and consequently can ignite wildfires when weather and fuel conditions are amenable. To decrease the risks to human life and property from destructive wildfires, FAPH maintains an aggressive prescribed burn program aimed to reduce fuel loading under prescribed conditions. More information on prescribed burning can be found in Chapter 7 (Forest Management) of this INRMP and Appendix E (Integrated Wildland Fire Management Plan).

Figure 6-6. Obscured Line-of-Sight. The forest canopy (foreground) obscures lateral and forward observation from an Observation Tower of indirect fire into Upper Zion Impact Area (center rear).

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6.4 GEOGRAPHIC INFORMATION SYSTEMS

GIS is the principal computer-based planning platform utilized by the installation to inventory, manage, document, and spatially project infrastructure, facilities and natural/cultural resources. FAPH maintains a central repository of spatial data that are in a continuous state of development, update, or revision. The installation GIS program is administered by DPW, Master Planning Division. Geospatial data of installation features are used daily by the natural resources program in generating annual workplan requirements and executing planned activities to ensure successful completion of projects and actions.

6.5 CULTURAL RESOURCES INTEGRATION

FAPH encompasses more than 500 archeological and architectural resource sites that include (but are not limited to): Prehistoric, Native American, Civil War, and 19th-20th century homestead sites. Nine (9) sites have been determined eligible for listing on the National Register of Historic Places. This INRMP shall be implemented in accordance with the policies, practices, and procedures set forth in the Installation's Integrated Cultural Resources Management Plan (Appendix D).

6.6 CLIMATE CHANGE

In accordance with DOD policy, military installations must integrate potential impacts from climate change into their INRMPs. To date, FAPH has evaluated potential impacts from climate change to swamp pink and the oak-pine vegetative cover type prevalent across the installation. Negative impacts to either of these species would increase the challenge and complexity of natural resources management. Swamp pink has been shown to be moderately to highly vulnerable to potential impacts largely due to the potential risk of rising water levels. The oak-pine forest type is considered less vulnerable as this cover type is resilient to disturbances such as wildfire and wind damage. The conservation of both resources is not considered at risk at this time. FAPH will continue to evaluate the potential impacts to climate change to installation natural resources.

6.7 CONSERVATION VOLUNTEER PROGRAM

FAPH provides an opportunity for the general public to complete natural resources-related projects as Conservation Volunteers in accordance with DOD Instruction 1100.21. Conservation volunteers are required to complete a Volunteer Agreement Form (DD Form 2793) and identify what type of volunteer activity they would like to complete. Traditionally, activities associated with riparian buffer establishment and nature trails have been completed under this agreement but any type of service project beneficial to the Natural Resources Program would be applicable.

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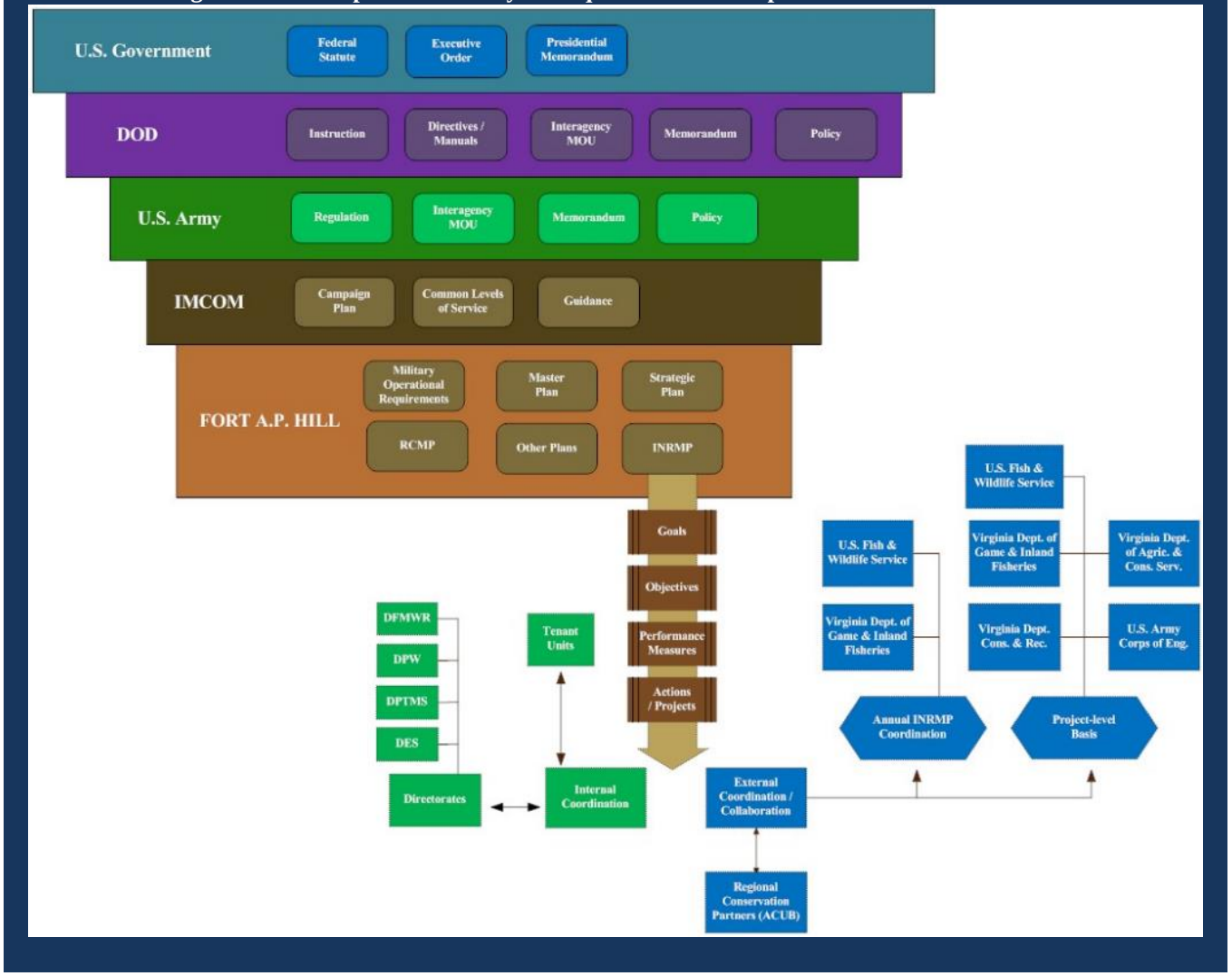
Figure 6-7. Conceptual Hierarchy of Requirements for Implementation of this INRMP



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7.0 FOREST RESOURCES MANAGEMENT

7.1 INTRODUCTION

The DPW-ENRD Forestry Branch plays a primary role in natural resource management on the installation with forests covering approximately 85% of the FAPH landscape (65,000 acres). With coordinated planning and implementation, forest management benefits the military training environment and local biological communities when applied from a long-term, landscape-scale perspective. The forest management component of the INRMP describes this long-term management perspective as applied within decision-making and in management action implementation. Forest management is a complex, dynamic program that creates the training landscape structure available at the garrison, while also applying scientific survey and monitoring methodologies, conducting timber sale preparation and contract management, coordinates activities with multiple programs and directorates, planning and applying wildland fire, conducting extensive data management, resource mapping and activity tracking and reporting procedures.

The purpose of this chapter is to describe the goals, objectives, and procedures implemented at FAPH, which ensure optimal functionality of the forest resource for training and ecosystem management. This chapter also describes the forest management concepts applied at FAPH, the program workflows, and the projects to be implemented over the next five-year operational period. This is accomplished by integrating principles and guidelines specified by DOD, the Army, and established ecosystem management principles into the forest management planning process. A long-term vision for the desired forest structure and landscape forest mosaic is designed to facilitate and optimize military training and ecosystem needs as they evolve over time. This chapter also outlines the process and considerations that were implemented to attain the long-term vision and forest management approach. Processes and considerations used to prioritize and implement management actions as well as those required to monitor progress in shifting the forest structure from its current state to the Desired Future Condition (DFC) are also outlined.

The forest resources chapter also documents: the process used to develop Forest Management Units (FMUs), evaluating management units for appropriate DFC's (or goal condition), and the process of assigning silvicultural systems. Additionally, this chapter provides an outline of programmatic direction, processes, and logistics for both daily and annual operations within the Forestry Branch.

Long-term (for forest management planning in this document) is 100 years, and so, all goals for DFCs, forest modeling, and silvicultural prescription timelines assume a 100-year timeframe. It is intended for forest management action plans to be developed in five-year increments. This provides opportunity for adaptive management considerations related to military mission, land use changes, updated regulations, and resource status changes. This chapter and management approach should be updated every five-years (as needed) concurrently with the development of

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each five-year action plan and annual Declaration of Availability (DOA) for timber. Actions implemented as a result of this plan will follow and apply NEPA procedures.
Forest resource management is mandated on DOD lands by DOD Instruction 4715.03, Natural Resources Conservation Program. This directive states, "DOD forest lands shall be managed for sustained yield of quality forest products, watershed protection, wildlife habitat, and other uses that can be made compatible with mission activities." This directive further states, "forest products shall not be given away, abandoned, carelessly destroyed, used to offset costs of contracts, or traded for products, supplies, or services." These specified concepts and directives are incorporated in forest planning and decision-making.

Additional forest resource management and forestry funds guidance are provided in AR 200-1, Environmental Protection and Enhancement; AR 405-80, Management of Title and Granting Use of Real Property; and AR 405-90, Disposal of Real Estate. Table 7-1 outlines all applicable federal, Army, and local laws, regulations, directives and guidance applied to forest management at FAPH. FAPH Forest management practices align, meet, or exceed standards and practices conducted in the Commonwealth.

Table 7-1. Laws, Regulations, Directives, and Guidance applicable to Forest Management

Federal
Sale of certain interest in land; logs (10 U.S.C 2665)
The Clean Water Act, *as amended* (33 U.S.C 1251 et seq.)
The Sikes Act, as amended (16 U.S.C. 670 et seq. / 32 CFR 190)
The Endangered Species Act, *as amended* (16 U.S.C. Sec 3371 et seq. / 50 CFR 17; 50 CFR 402)
The National Environmental Policy Act (43 U.S.C. 4321 et seq. / 40 CFR 1500)
DOD
Defense Finance Accounting Service – Indianapolis Regulation 37-1, *Finance and Accounting Policy Implementation*, Chapter 14, "Sales and Revenues", June 2004
DOD Financial Management Regulation 7000.14-R, Volume 11A, Chapter 16, August 2002
DOD Instruction 4715.03, Environmental Conservation Program
DOD Instruction 6055.06, DOD Fire and Emergency Services Program
DOD Instruction 6055.17 Installation Emergency Management Program
Conserving Biodiversity on Military Lands: *A Guide for Natural Resource Managers*
U.S. Army
Army Regulation 200-1 - *Environmental Quality: Environmental Protection and Enhancement*
Army Regulation 115-13 - *Installation Geographic Information and Services*
Army Regulation 215 -1 - *Non-appropriated Fund Instrumentalities*
Army Regulation 405-80 - *Management of Title and Granting Use of Real Property*

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U.S. Army (con't.)
Army Regulation 405-90 - *Disposal of Real Estate*
Army Regulation 420-1 - *Army Facilities Management*
Army Policy Guidance - *Procedures for Installation-Conducted Timber Sales* (June 2004)
Army Policy Guidance - *Reimbursable Agricultural/Grazing and Forestry Programs* (August 1999)
Army Wildland Fire Policy Guidance (September 2002)
Memorandum from the Principal Deputy Assistant Secretary of the Army (Installations and Environment), *Army Forest Conservation Policy* (October 2000)
Fort A.P. Hill
Regulation 200-1, *Environmental Requirements*
Regulation 200-11, *Program for Firewood Cutting*
FAPH ICRMP (Appendix D)
FAPH IWFMP (Appendix E)
FAPH Environmental Handbook
Commonwealth of Virginia
Virginia Department of Forestry Best Management Practices (Technical Manual)
Virginia State Water Control Law (§§ VA. CODE ANN. 62.1-44.2 to -44.33:28 / 9 VAC 25, 31, 830, 840, 870)

7.2 ROLES & RESPONSIBILITIES

The FAPH Garrison Commander is responsible for i) ensuring the INRMP is adequately funded to ensure forest management objectives can be met, ii) reviewing and providing approval on the annual DOA for timber sales after review by higher headquarters and U.S. Army Environmental Command (USAEC), iii) requesting in-house timber sale approval in appropriate circumstances, and iv) designating a Wildfire Program Manager for the installation. The Director of Public Works is responsible for reviewing the annual timber DOA.

The DPW-ENRD is the office of primary responsibility for the management of the forest resources on FAPH. The ENRD Chief is responsible for ensuring that all federal and state laws and regulations are adhered to in conducting forest management activities. The Installation Forester and Forestry Planner are responsible for forest resource management, conservation, monitoring and coordination, to include timber harvests, timber stand improvements, forest inventory and reporting, wildland fire planning and operations, and overall program planning and management. FAPH follows the directives set out by DODI and Army Regulations to manage its lands on an ecosystem basis commensurate with military mission requirements which maintains and maximizes biodiversity.

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7.3 FOREST MANAGEMENT OBJECTIVES

FAPH manages its forest resources in accordance with all applicable laws, regulations, directives, and guidance (Table 7-1) to meet overall INRMP goals and objectives (Table 7-2).

Table 7-2. FAPH INRMP Goals, Objectives, and Performance Measures accomplished through Forest Management (in bold)

Goal	Objective(s)	Performance Measure(s)
1.0 Sustainably manage the Army's natural resources to support Mission requirements	**1.1 Coordinate with military land users to identify Mission requirements**	**(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)**
	1.2 Sustainably manage habitats to meet doctrinal training requirements	**(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned** (3) % of Open Areas in prescription (4) Deer density (per mi^2) (5) WASH Plan (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities	(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR **(5)** Open area condition (6) Annual updates to Hunting and Fishing Regulations
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	**(1) Outreach events** (2) Recreation Safety (3) Public wildlife viewing opportunities
	2.3 Implement activities that mutually benefit installation natural resources management and the community	(1) Recreational user satisfaction (2) Recreational user trends (3) Sufficient no. of adequately trained CLEOs
3.0 Sustainably manage desired species and communities with proven scientific principles in	**3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.**	**(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen., CBI, Pest)**

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Table 7-2. FAPH INRMP Goals, Objectives, and Performance Measures accomplished through Forest Management (in bold)		
Goal	**Objective(s)**	**Performance Measure(s)**
accordance with all applicable federal, state and local laws and regulations	**3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity**	(1) Population indices **(2) Suitable habitat (acres)**
	3.3 Manage invasive species to limit impacts to native habitats	**(1) Treatment / Control (% of occurrence sites) (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials**

7.4 FOREST MANAGEMENT HISTORY

The U.S. Army acquired the land now occupied by FAPH between 1940 and 1941 when it was predominantly open agricultural land. Formal forest management began in the early 1960's with a program run by the USACE. The first major reforestation efforts took place in 1969 and production-oriented forestry was implemented between 1970 and 1980. Additionally, timber value was salvaged from areas that were intended to be used as ranges and firebreaks. It was at this time that the first five-year management plan was developed and implemented to guide activities on the ground.

Forest monitoring began in 1981 with the initiation of Continuous Forest Inventory (CFI) efforts, which established baseline volume estimates. During 1982-1983, FAPH experienced an outbreak of southern pine bark beetle (*Dendroctonus frontalis*) with a second outbreak occurring in 1991. The forestry program implemented NEPA evaluation and documentation of forest management actions starting in 1991 and conducted its first pre-harvest threatened and endangered species surveys in 1995. Between 1995 and the present, the forestry program has advanced significantly in forest mapping, inventory, long-term planning, and ecosystem-based forest management.

7.5 FOREST RESOURCE DESCRIPTION

7.5.1 GENERAL

Forests cover approximately 65,000 acres (87 %) of the installation land area (Figure 7-1). FAPH encompasses three cover types: southern yellow pines, mixed hardwoods, and a mixed pine-hardwood cover type. Generally, a mix of southern pine and hardwoods occurs on the uplands, whereas nearly pure stands of hardwoods occur on slopes and in the creek bottoms. Pine-dominated sites occupy abandoned farmland and plantations throughout the installation and in areas with frequent fire regimes, such as those in the Range Complex. The presence of these three forest covertypes and their varying stand structures contribute to a relatively high level of biological diversity on the installation.

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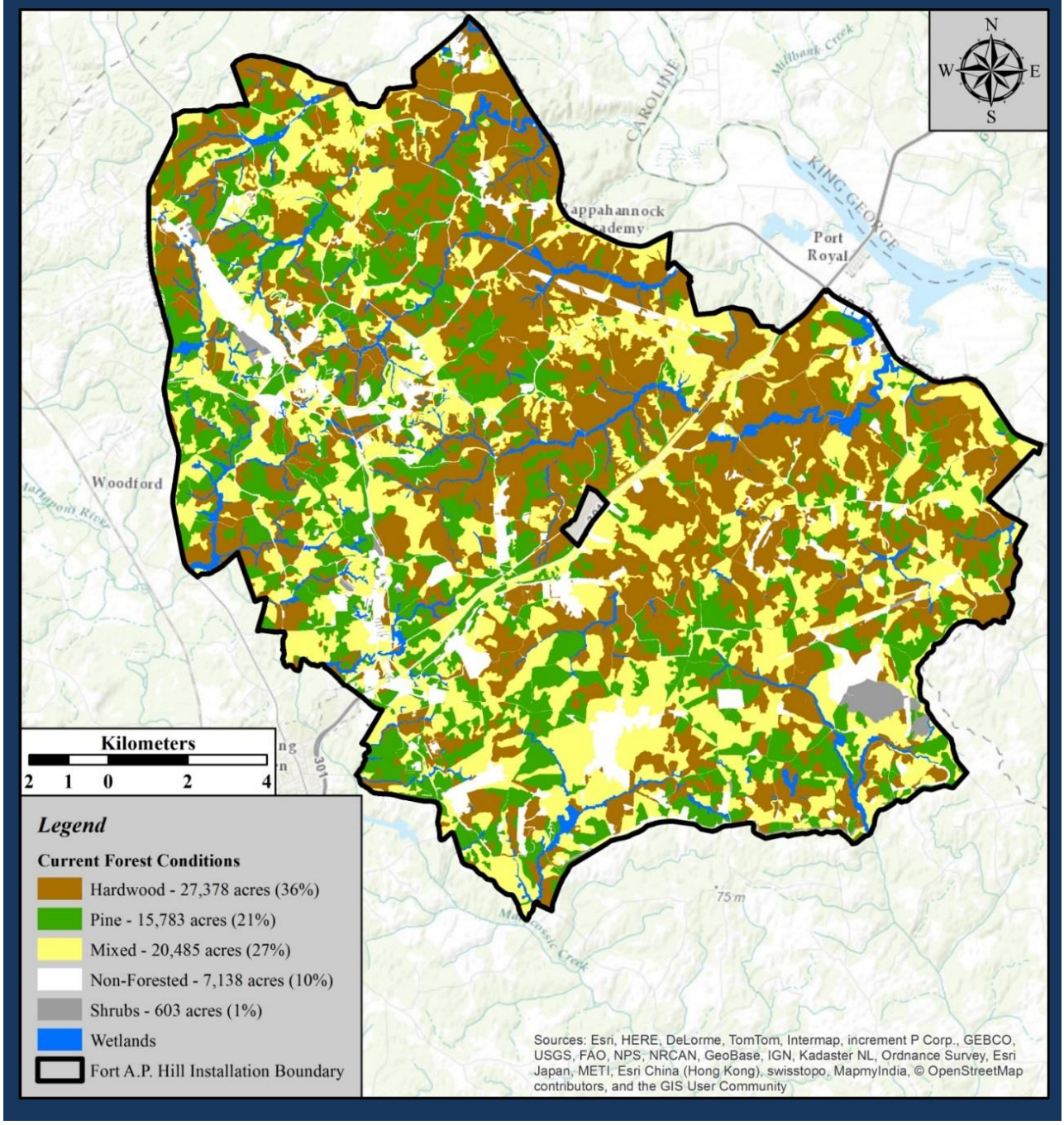
Figure 7-1. General Forest Cover Type Map

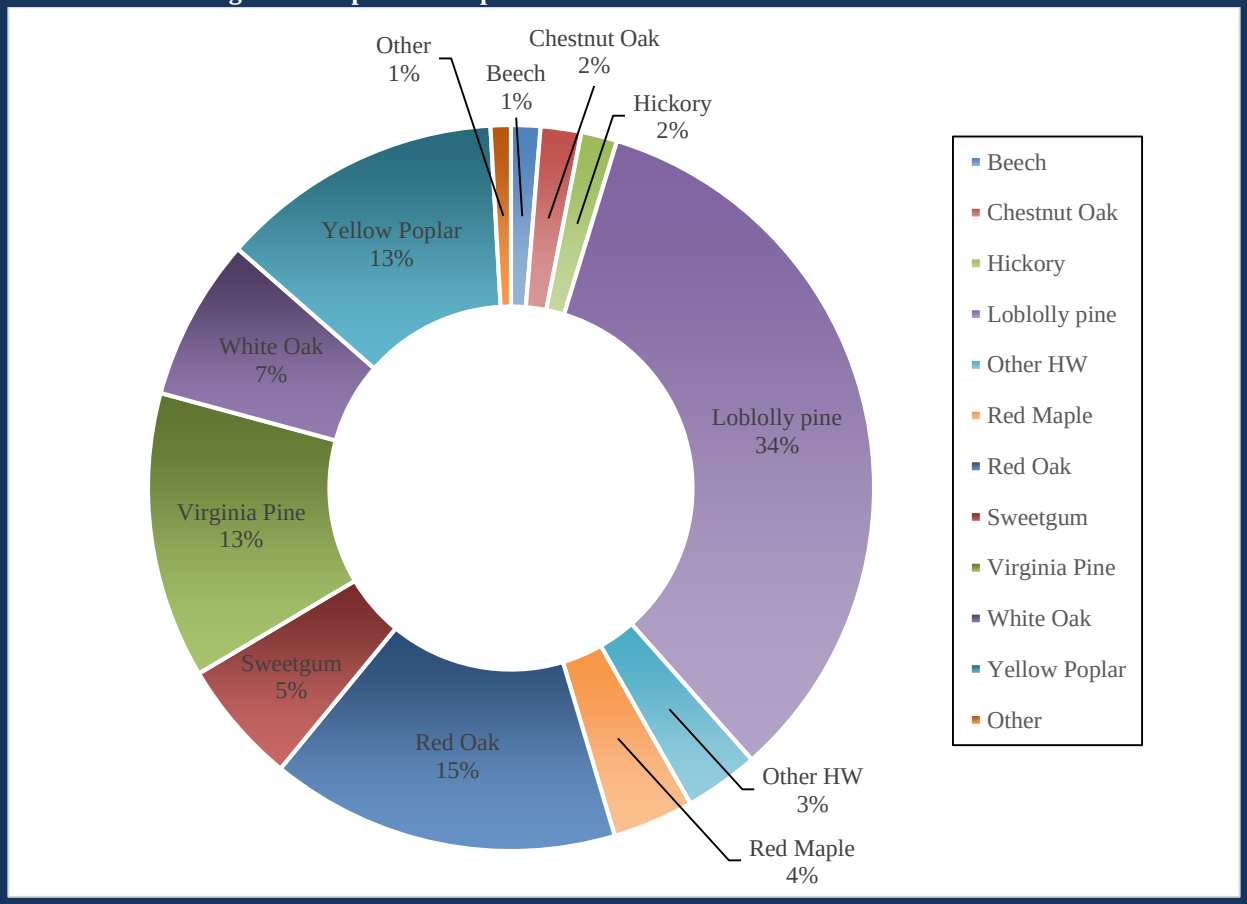


7.5.2 FOREST COVER TYPES

Forest cover on the installation includes more than 20 different distinct vegetation communities, and can generically be classified as Pine, Hardwood, or Pine-Hardwood Mixed. Pine forests

cover 29% percent of the installation land area (33% of forested acres) and include natural forests as well as plantations of various ages. Dominant pine species include loblolly pine (*Pinus taeda*) and Virginia pine (*P. virginiana*), with a small component of shortleaf pine (*P. echinata*). Deciduous broad-leaf forests cover approximately 35% of the land area (40% of forested acres). The primary species include yellow-poplar (*Liriodendron tulipifera*), red oaks (*Quercus falcata, Q. rubra, Q. coccinea,* and *Q. velutina*), and white oaks (*Q. alba, Q. stellata, Q, prinus,* and *Q. phellos*) interspersed with hickory (*Carya* spp.), sweetgum (*Liquidambar styraciflua*), black gum (*Nyssa sylvatica*), ash (*Fraxinus* spp.), river birch (*Betula nigra*), black cherry (*Prunus serotina*), hackberry (*Celtis occidentalis*), red maple (*Acer rubrum*), American beech (*Fagus americana*), American sycamore (*Platanus occidentalis*), flowering dogwood (*Cornus florida*), and eastern redbud (*Cercis canadensis*) . Approximately 24% of FAPH is covered by a mix of evergreen, needle-leaf trees and deciduous, broad-leaf trees (27% of forested acres).

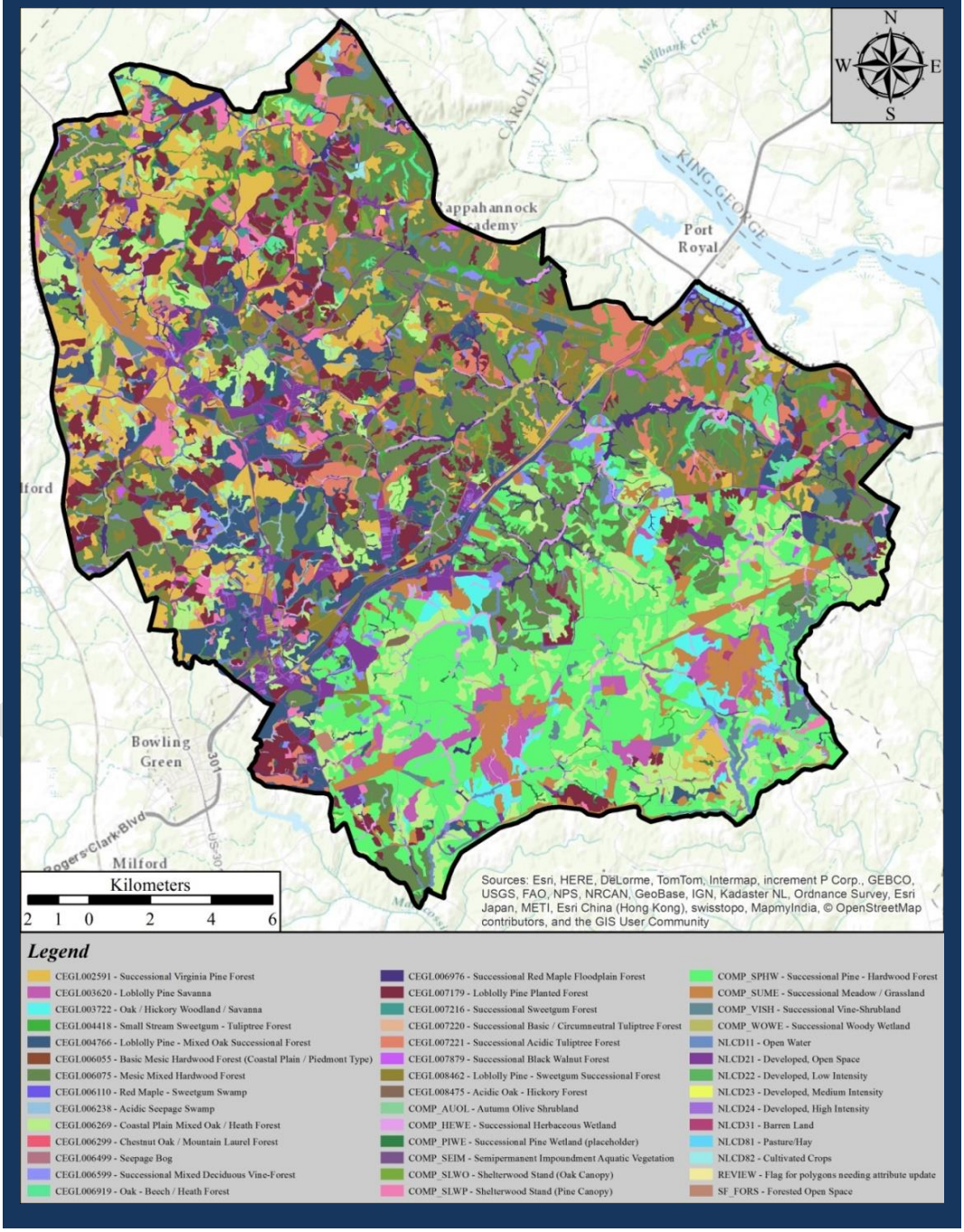
Figure 7-2. Species Composition as a Percent of Merchantable Basal Area



Forest types and vegetation associations are classified and mapped as per the National Vegetation Classification System (NVCS) presented in Chapter 6 (Figure 7-3) and the Society of American Foresters (SAF) cover type system. Both of these vegetation classification systems

allow resource managers to describe and quantify the resource using defined vegetation associations that are utilized by other forest management professionals. These systems also help managers at FAPH understand their ecosystem through the vegetation communities and better evaluate the biodiversity and habitat types existing at the installation.

Figure 7-3. Vegetation Communities of FAPH



7.5.3 FOREST TIMBER VOLUMES

Forest volumes refer to the amount of cubic feet of pulpwood and board feet of sawtimber that are contained in the total forested area of the installation. This information was calculated using inputs from a variety of forest inventory efforts occurring from 1998 to present; data are refreshed through ongoing inventory efforts. The total board foot volume for both pine and hardwood sawtimber is estimated to be 599,765,600 board feet (nearly 600,000 MBF). The total volume of pine and hardwood pulpwood is estimated to be 740,380 cords (or) 68,677,000 cuft (or) 2,017,250 tons. Areas where timber volume inventories could not occur due to unexploded ordinance (UXO) hazards were excluded from these estimates.

Available timber volume data is current (measured within the last 10 years) for about 40% of the manageable forest area as of 2015. Inventories are conducted on approximately 10% of the forested acres each year; manageable forest acres that are capable of producing a commercial product receive priority. This approach creates a 10-year "data refresh" of forest structure, cover, and volume data for the installation forest resource. Consistent program funding and resourcing is required to implement this continual-refresh forest inventory effort.

7.5.4 FOREST VALUE

Forest valuation is multi-faceted depending on the objective of focus. Though the forest has innate monetary value in the marketable standing timber volume, there is also a non-monetized ecosystem and military training value provided by the forest resource.

The importance of the forest resource for meeting the military training requirements at FAPH is not easily quantified in terms of monetary value. Additional non-monetized benefits are realized through wildlife habitat, clean air and water resources, recreational opportunities and other ecosystem services. The significant amount of forest acreage on the installation is managed in a way to maintain the forest cover and protect the watersheds as through generous forest riparian buffers.

The forest is also extremely valuable as a renewable natural resource. It can provide a sustained yield of forest products indefinitely when managed appropriately. These products provide essential items, on which society is dependent, and employment throughout the forest industry including logging, forest product manufacturing, retail product sales, and construction. Monetary value is driven by available growing stock and current market prices; market prices and product value fluctuate depending on the current economic condition. Based on current pricing and recent (within three years) timber sale contract product pricing, the estimated value for the inventory of forest products at FAPH is $49,761,988.

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Table 7-3 Estimated Timber Value for the Caroline County Region									
Year	**Locality**	**Pine (MBF)**	**Pine (cords)**	**Hardwood (MBF)**	**Hardwood (cords)**	**Total CUFT**	**Value: Pine**	**Value: Hardwood**	**Total Value**
2010	CAROLINE	29,144	48,410	17,268	20,345	13,779	$5,242,465	$2,948,287	$8,190,752
Source: United States Forest Service (Forest Inventory & Analysis)									

Table 7-4. Mean Volume, Mass, and Valuation of Merchantable Timber by Forest Product Type										
Strata	**Pulpwood (CUFT/acre)**	**Pulpwood (tons/acre)**	**Pulpwood (cords/acre)**	**Sawwood (CUFT/acre)**	**Small sawwood (tons/acre)**	**Large sawwood (tons/acre)**	**Sawwood/acre (IntQrt (Bdft.)**	**CNS Tons/acre**	**Pulpwood $/acre (2006)**	**Sawwood $/acre (2006)**
Hdwd-Large-High	992.9	29.0	10.7	2,355.8	17.8	49.9	12,273.1	1.2	181.0	1,576.2
Hdwd-Large-Low	1,146.6	33.5	12.3	1,744.6	11.3	38.9	9,033.9	0.8	208.9	1,147.9
Hdwd-Small-High	1,114.6	32.6	12.0	1,546.5	14.6	27.9	7,927.9	2.7	198.6	1,049.9
Hdwd-Small-Low	1,164.1	34.0	12.5	1,101.3	15.0	16.5	5,427.3	0.7	214.6	716.4
Mixed-Large-High	1,113.3	32.6	11.9	2,066.0	17.4	38.3	10,448.5	4.8	210.8	1,506.7
Mixed-Large-Low	1,008.8	29.5	10.8	1,341.1	13.5	22.2	6,655.3	3.5	186.4	1,109.9
Mixed-Regen-Low	177.7	5.2	1.9	196.1	1.5	4.2	997.0	0.0	32.8	199.9
Mixed-Small-High	1,200.2	35.1	12.9	1,395.7	14.5	18.0	6,626.8	8.3	224.7	1,086.0
Mixed-Small-Low	699.5	20.5	7.5	872.4	8.6	13.0	4,197.5	3.9	133.1	738.6
P.Pine-11-19-Thinned	1,320.2	38.6	14.2	558.6	0.9	0.9	1,891.0	14.5	273.5	392.9
P.Pine-11-19-UnThinned	1,182.2	34.6	12.7	650.4	3.0	0.7	2,330.7	15.3	239.1	498.8
P.Pine-20-29-Thinned	567.3	16.6	6.1	1,588.9	25.6	3.9	6,675.0	17.0	113.8	1,488.6
P.Pine-20-29-UnThinned	1,526.7	44.7	16.4	1,724.0	12.6	2.0	6,499.4	35.9	306.3	1,397.6
P.Pine-30+-Thinned	805.9	23.6	8.7	1,716.4	32.0	2.7	7,301.4	15.5	154.0	1,676.0
P.Pine-30+-UnThinned	1,133.5	33.2	12.2	1,937.8	25.5	62.0	8,116.7	25.0	226.5	1,767.7
P.Pine-6-10-UnThinned	793.6	23.2	8.5	24.3	0.4	0.0	99.2	0.3	163.7	23.2
Pine-Large-High	1,136.8	33.3	12.2	2,024.8	22.8	23.7	9,596.3	12.7	224.8	1,982.6
Pine-Large-Low	739.3	21.6	7.9	1,273.7	13.3	18.8	6,235.4	5.1	143.5	1,209.3
Pine-Regen-Low	241.5	7.1	2.6	20.3	0.0	0.0	79.7	0.6	41.6	14.2
Pine-Small-High	1,098.9	32.1	11.8	1,748.4	15.9	12.8	7,720.8	22.4	220.6	1,344.4
Pine-Small-Low	903.2	26.4	9.7	805.3	8.6	6.0	3,687.9	8.9	177.8	671.2
AVERAGE	955.6	28.0	10.3	1,271.1	13.1	17.3	5,896.2	9.5	184.6	1,028.5

It is important to realize the economic value of the forest from the aspect of the benefits that are derived from the sale and manufacturing of forest products. Considering the commodities

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provided, the employment generated, and the total monetary value of these benefits, it would be a critical loss if this renewable resource was not managed for a sustained yield. At FAPH, the sale of forest products, in turn, funds the majority of the Forestry Branch operating expenses. A self-sustained program provides for a quality training environment and the maintenance of a healthy forest and ecosystem environments through harvesting, prescribed burning, inventory and condition monitoring. Additionally, as per 10 UCS Sec 2665, the Commonwealth receives 40% of the total profits (timber revenue less program expenses) generated by the FAPH forestry program as a state entitlement to be used for the betterment of public schools and public roads. In Virginia, this profit share is distributed to Caroline County.

The forest products industry plays a major economic role in the Commonwealth of Virginia and in the region surrounding FAPH. From the strong industrial base worth $25.4 billion in annual total economic output to a wide-ranging array of forest related values worth $5.1 billion annually, the forest resource on FAPH contribute to an established industry and economic driver in Virginia (VDOF 2010) as described below:

The forest resource of the Commonwealth:

a. Contributes $27.5 billion annually to Virginia's economy

b. Continues to support one of the largest manufacturing industries in the state, ranking first in employment, wages and salaries

c. Contributes $345 million back to Virginia landowners for selling their timber

d. Provides more than $3 billion in recreational opportunities to two-thirds of citizens

e. Generates more than 144,000 jobs

f. Generates an estimated $60 million through specialty forest products

g. Protects Virginia watersheds from erosion and sedimentation

h. Provides long-term carbon sequestration (long-term storage of carbon in the terrestrial biosphere) which contributes to clean air and enhances our quality of life.

i. Provides important social benefits including attractive sites for homes, scenic beauty, wildlife habitat, a draw for visitors and potential new residents.

The growth of the forest products industry in Virginia has contributed to a strong economy and has provided the market drivers that enable a successful forest management and timber sale program at the installation. In turn, forest management activities at the installation contribute to

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the economic drivers within the Commonwealth. A continuing high level of management and protection is needed to maintain this valuable forest resource.

7.6 FOREST RESOURCE MANAGEMENT ADMINISTRATION

The extensive forest resource occurring at FAPH requires a high level of integration with trainers and natural resource managers and as well as a thorough understanding of the forest resource itself. This section describes integration efforts and the background and current approach to forest inventory applied at FAPH. Additionally, for the purpose of communication, understanding, procedural archiving and future updates, the process applied for FMU, forest stand delineation, DFC selection, silvicultural prescription assignment, and programmatic integration is documented in the following sections. The procedure for tracking data within the shifting forest mosaic is also described. This process will need to be reviewed after the initial five-year plan implementation in accordance with the Adaptive Management Process.

7.6.1 FOREST MANAGEMENT INTEGRATION

Forest management has the ability to rapidly and drastically change the training environment, ecosystem and habitat features occurring on any given acre. In order to best determine the secondary and tertiary impacts that an action may have on a complimentary or neighboring resource, a detailed review of the proposed action is performed by natural and cultural resource managers and training personnel.

7.6.1.1 INTEGRATION WITH MILITARY MISSION TERRAIN REQUIREMENTS

Per AR 200-1 (2008) “Use silvicultural treatments designed to improve military mission areas, and when possible, attain multiple use and sustained yield timber management while enhancing watersheds, wildlife habitats, and natural beauty values along scenic corridors.”

The FAPH forest resource serves a variety of needs with the primary purpose of providing a sustainable, useful training environment (INRMP, Chapter 6). The forest can be an asset and a limitation depending on the type of training that needs to be conducted and the forested conditions found on those sites. Generally speaking, it is known that much of the forest on FAPH is too dense (trees per acre) to conduct off-road maneuvers and also inhibits visibility desired for dismounted land maneuvers. In order to identify portions of the forest that will most benefit desired training scenarios, ENRD, Land Rehabilitation and Maintenance (LRAM), and Range Control personnel initiated an Integrated Vegetation Management Planning effort. This exercise allowed managers and trainers to examine the installation as a training landscape and hone in to site-specific requirements in each training area. This level of integration identified the need for large swaths of forest to be suitable for off-road vehicle maneuvering. The tree spacing and residual site characteristics required to support this type of training is built into updated DFC’s for these forested areas as well as the management prescriptions set forth for harvesting. These efforts are on-going.

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Range managers also provide direct review and feedback of forestry actions by participating in annual timber and prescribed burn plan review, the Timber Scoping Meeting review process, scheduling integration, composite risk review prior to prescribed burning, and ROA review prior to timber harvests. Efforts to coordinate forest management actions with respect to training mission requirement and shared land use is an iterative and continually evolving process.

7.6.1.2 INTEGRATION WITH RESOURCE MANAGERS

Prior to action implementation, each proposed site is reviewed for potential impacts to water resources, wildlife, threatened and endangered, or rare species, cultural resources, other ecologically sensitive sites, or training resource impacts or benefits. The Natural Resource Site Assessment (NRSA) process is implemented internal to the ENRD, and is an integrated review and accountability procedure. This process allows installation resource managers an opportunity for oversight and input to planned forest or other resource management actions. Input and responses are documented, tracked and archived in accordance with internally established procedures.

To facilitate the NRSA process for timber harvests and to encourage a higher level of integration and interaction among resource managers, a harvest scoping process is applied. The Timber Scoping Meeting is the initial component of the NRSA process regarding proposed timber harvest at FAPH.

The Timber Scoping Packet is an informational resource that provides reviewers with an overview of the timber block locations, current conditions, harvest prescription plans, expected post-harvest conditions, and anticipated follow-up actions. Multiple maps are generated for each block to establish the location, block layout, and environmental, training, utilities, and other compliance considerations.

The Timber Scoping Meeting is attended by all stakeholders including all natural resource managers, environmental compliance personnel, Range Control, and LRAM personnel, at minimum. The meeting is styled as a round-table, open forum to engage resource managers and discuss concerns or alternatives to proposed harvest plans as appropriate in order to meet multiple management objectives.

7.6.2 FOREST INVENTORY, MONITORING, AND MAPPING

Forest inventory efforts provide the basic data and information required to make scientifically-based forest management decisions. The data provide a renewing picture of the state of the forest and related species composition, structure, and overall health. Forest volume data are the basis for timber resource valuation. They are the basis for providing information for Army real estate accounting and determination of budgets and financial allocation as through the annual timber DOA. Forest inventory and monitoring data are the backbone of forest trend monitoring and adaptive management processes. They provide insight to future species composition and are

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factored into silvicultural prescription decisions. Mapping the structural changes that are occurring can be directly tied to the inventory data being collected, provide a visual source for monitoring trends through time, and create a geographic archive of past and current forest resource conditions. Due to changes that occur in the forest on a continual basis, forest inventory and monitoring are on-going efforts.

7.6.2.1 FOREST INVENTORY BACKGROUND

AR 200-1 and supplemental policy guidance sets the requirement for maintaining a current forest inventory: "Volume inventories of forest stands will be made and kept current (not older than ten years) to provide for sustained production of forest products."

The FAPH Forestry Branch has conducted periodic forest inventories since 1981, with the most comprehensive efforts occurring in 1997 by the then Land Condition and Trend Analysis (LCTA) program and the latest conducted in 2005/2006. This most recent iteration of installation-level inventory combined traditional ground sampling methods with remote sensing applications. Using remote sensing techniques, the forest stands have been delineated into 21 descriptive forest strata based on cover type, size class, and density (Table 7-5). Ten percent of all the forested stands were inventoried and the data collected on the ground were extrapolated based on related strata. This remote-sensing, stratified inventory approach enabled FAPH to enhance the information on forest stands within the range complex where significant data gaps exist due to limited access.

Data collected in any type of forest inventory or survey are compiled into a centralized forest inventory geodatabase that tracks data on the forest stand level. This geodatabase is updated quarterly with any new data available for any given forest stand. The stand-level data can then be summarized on the FMU, sub-watershed, or landscape-level as needed.

Table 7-5. Description of Forest Strata Identified at FAPH

Stratum #	Stratum Code	Acres	Stratum Description
3	Hdwd-Small-Low	659.6	• Greater than 75% hardwood cover • Average diameter = 5-11.9 inches (crown width 5-8 m) • Less than 69% crown closure
4	Hdwd-Small-High	646.6	• Greater than 75% hardwood cover • Average diameter = 5-11.9 inches (crown width 5-8 m) • Greater than 69% crown closure
5	Hdwd-Large-Low	8,214.3	• Greater than 75% hardwood cover • Average diameter = 12+ inches (crown width >8 m) • Less than 69% crown closure
6	Hdwd-Large-High	16,446.0	• Greater than 75% hardwood cover • Average diameter = 12+ inches (crown width >8 m) • Greater than 69% crown closure

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Table 7-5. Description of Forest Strata Identified at FAPH			
Stratum #	**Stratum Code**	**Acres**	**Stratum Description**
7	Mixed-Regen-Low	46.0	• Pine or hardwood individually do not make up more than 75% of the cover type • Most trees are in the seedling/sapling stage (crown width <5 m) • Less than 69% crown closure
9	Mixed-Small-Low	1,154.9	• Pine or hardwood individually do not make up more than 75% of the cover type • Average diameter = 5-11.9 inches (crown width 5-8 m) • Less than 69% crown closure
10	Mixed-Small-High	1,570.6	• Pine or hardwood individually do not make up more than 75% of the cover type • Average diameter = 5-11.9 inches (crown width 5-8 m) • Greater than 69% crown closure
11	Mixed-Large-Low	5,078.1	• Pine or hardwood individually do not make up more than 75% of the cover type • Average diameter = 12+ inches (crown width >8 m) • Less than 69% crown closure
12	Mixed-Large-High	10,201.9	• Pine or hardwood individually do not make up more than 75% of the cover type • Average diameter = 12+ inched (crown width >8m) • Greater than 69% crown closure
13	Pine-Regen-Low	129.2	• Greater than 75% pine cover • Most trees are in the seedling/sapling stage (crown width <5 m) • Less than 69% crown closure
15	Pine-Small-Low	858.8	• Greater than 75% pine cover • Average diameter = 5-11.9 inches (crown width 5-8 m) • Less than 69% crown closure
16	Pine-Small=High	2,322.5	• Greater than 75% pine cover • Average diameter = 5-11.9 inches (crown width 5-8 m) • Greater than 69% crown closure
17	Pine-Large-Low	4,473.1	• Greater than 75% pine cover • Average diameter = 12+ inches (crown width >8 m) • Less than 69% crown closure
18	Pine-Large-High	7,964.8	• Greater than 75% pine cover • Average diameter = 12+ inches (crown width >8 m) • Greater than 69% crown closure
20	P.Pine-6-10-Unthinned	142.9	• Pine plantation • 6-10 years since establishment • No thinning applied
21	P.Pine-11-19-Unthinned	1,047.0	• Pine plantation • 11-19 years since establishment • No thinning applied
22	P.Pine-11-19-Thinned	87.3	• Pine plantation • 11-19 year since establishment • Thinning treatment applied
23	P.Pine-20-29-Unthinned	2,146.6	• Pine plantation • 20-29 years since establishment • No thinning applied

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Table 7-5. Description of Forest Strata Identified at FAPH			
Stratum #	**Stratum Code**	**Acres**	**Stratum Description**
24	P.Pine-20-29-Thinned	251.3	• Pine plantation • 20-29 years since establishment • Thinning treatment applied
25	P.Pine-30+-Unthinned	954.2	• Pine plantation • 30+ years since establishment • No thinning applied
26	P.Pine-30+-Thinned	1,080.6	• Pine Plantation • 30+ years since establishment • Thinning treatment applied

7.6.2.2 FOREST INVENTORY ELEMENTS

There are multiple inventory and survey efforts that contribute to the INRMP and Forestry geodatabases and forest management decision-making. Inventory and survey methodologies are referenced in Appendix C. These inventory elements are currently as follows:

a. Forest Resource Inventory (FRI) surveys are an inventory effort originating in 2011. This inventory is being conducted at the FMU level across a select amount of the installation annually. This will serve as the resource status update data which will be included in the geodatabase for a continually renewing and updated data source. The data collected includes both overstory, midstory and regeneration level information to determine the potential impacts on species composition based on selected management prescriptions and established objectives or DFCs. The goal is to inventory at least 10% of the manageable forest acres, but preferably 10% of the total forested acreage each year to provide for a ten-year volume refresh occurring on a ten-year cycle.

b. Continuous Forest Monitoring (CFM) program surveys several hundred permanent plots to determine growth, yield, in-growth, mortality, and detailed information on forest structure and forest health. Last conducted in 2007, the CFM plots should be resurveyed no later than 2017. CFM provides a dataset essential for evaluating forest trends overtime as compared to the current snapshot provided by FRI.

c. Pre-management timber cruises are conducted for more detailed volume estimates prior to harvesting activities.

d. A post-harvest site condition and contract compliance walk-through evaluation is conducted within 10 business days of the completion of a harvest action. A full After Action Review (AAR) inventory, using FRI methodology is conducted within one year of harvest completion to update the forest inventory to reflect residual stand characteristics following a timber harvest application. Additionally, the inventory results are reported in a format that clearly indicates if the residual conditions match the desired or specified conditions. AAR walk-through results and inventory reports are staffed amongst the DPW

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ENRD program areas to demonstrate compliance in timber harvest practices and to provide for adaptive management of improved attainment of management goals. Final reports are archived with the related NRSA document.

e. Oak regeneration data are collected to determine areas best suited specifically for oak regeneration establishment and management.

f. Invasive species are monitored through systematic permanent plot surveys to quantify and monitor spread and/or control in response to harvests, prescribed burns, or other forest management activities.

g. LIDAR data have been collected, which provides additional information related to tree heights, average heights in stands, and topographic data.

7.6.2.3 FOREST MONITORING

Resource monitoring determines the current and projected status of shifting the forest resource toward its designated DFC, training environment, and for ensuring the sustainability of management actions. Forest monitoring allows for management progress evaluation and programmatic course corrections in attaining DFCs and landscape goals. Monitoring and assessment of this long-term management plan will have three areas of focus. One is to implement an established set of performance measures and indicators to evaluate the sustainability of the management occurring on the installation. The second area of focus assesses forest data to monitor the progress of shifting the current forest structure to the DFC. The sustainability performance measures and indicators are applied at the installation/landscape level. Monitoring of the structure shift will occur and be summarized on each level of the nested management regime: landscape, sub-watershed, FMU, and forest stand. Finally, the measurable objectives developed for each goal and related actions of this INRMP will be monitored for their application and/or completion. Actions that have been completed will be removed in future updates of this Plan. At the same time, other actions may be updated or added as needed.

The methodology for monitoring each focus area is expected to evolve with the implementation of this INRMP. Developing performance measures and indicators related to sustainable forest management will provide metrics and a structure for resource monitoring and will lend itself to forest certification if pursued by FAPH. DFC progress will be monitored through on-going FRI survey efforts. As data are updated in the Forestry geodatabase, queries will be performed to quantify and summarize the presence of each DFC component (dominant species community, overall size class, and over-, mid-, and understory densities) as an input and decision factor for each five-year management plan development. Performance measures and indicators have been developed by the Sustainable Forestry Initiative (SFI) and other forest certification entities in order to create a standard to certify forest management sustainability. Using an established, approved set of performance measures and indicators for sustainability allows for direct evaluation of the sustainability of forest management occurring on the installation. By

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monitoring the presence/absence of performance measures and by applying forest certification standards to forest management on the installation now, FAPH will be well-positioned to enter the third-party certification process should regulation or market trends dictate such action. These performance measures and indicators should be re-evaluated with each subsequent five-year availability development.

A nested series of forest management units are applied at FAPH consisting of the forest stand, FMU, sub-watershed, and the overall landscape. Since goals for covertype and structure diversity have been assigned at each of these levels, monitoring efforts must also report at each of these levels to determine progress towards meeting each respective level of goals. The approach to attaining the multiple levels of forest monitoring focuses on the smallest unit, the forest stand. Resource inventory data will be collected at the forest stand level and subsequently summarized to determine the status of the FMU, sub-watershed, and landscape. As a result, the data will provide detail required to assign prescriptions to forest stands to meet FMU goals, but will also be available for query to determine the coarser-resolution requirements for landscape monitoring. Comparing updated forest structure data to the DFC may result in an alteration of prescription type or timing to create the desired results. GIS can be used to evaluate each stand for "compliance/non-compliance" with the related FMU DFC through time.

7.6.2.4 FOREST GROWTH AND HEALTH TRENDS

Growth is the net annual increase in the volume of growing stock between inventories after accounting for effects of mortality, but before accounting for the effects of harvest as defined by the United States Forest Service (USFS).

Based on USFS Southern Research Station 2012 Forest Inventory Analysis (FIA) data summaries for the installation and surrounding region, there continues to be a net increase in volume of live trees occurring within the Coastal Plain. This includes a net growth of 311 million cubic feet per year with removals occurring at a rate of 179.3 million cubic feet and mortality of 83.9 million cubic feet annually (Rose 2012).

Three separate large-scale forest resource inventories were conducted between 1997 and 2006 as described in Section 7.6.2.1. Pooling the findings from these inventories provides a relatively consistent monitoring assessment of forest resource conditions. Specifically:

a. The forest overstory for many strata are generally overstocked, indicating a need for widespread forest thinning to improve tree health and increase growth and development rates.

b. A comparison of annual diameter growth increments over the past 10 years demonstrates the increases in growth that occur following thinning operations.

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c. Forest thinnings also provide beneficial habitat for a variety of wildlife species, more so than their overstocked counterparts. Despite the reduced rates of growth due to the overstocked conditions, there are no widespread occurrences of mortality or large-scale incidences of forests pests.

d. Snags are being retained to the benefit of wildlife species, however large diameter (>12" DBH) snags are scarce on the landscape.

The sustainability of existing forest communities is uncertain due to trends in forest regeneration dynamics and potential for climate change impacts in the region. There is a general trend of insufficient amounts of regenerating forest structure overall, compounded by the disproportional levels of desired species abundance. There is a prevalence of hardwood regeneration in the understory of pine forests and undesirable hardwood regeneration in hardwood forests. Competing non-tree vegetation is prevalent in all understory height classes. This trend is attributed to the lack of effectual treatments to ensure desired species composition and future recruitment. American holly, deciduous ericaceous shrubs (e.g., blueberry, huckleberry), and sweetgum dominate the understory of pine, oak, yellow-poplar and mixed hardwood dominated forests.

Differences in land management practices have affected forest species composition and structure. Forest resource conditions in the Maneuver Training Areas (MTA) are consistent with state-wide forest resource inventories. However, similar forests in the Range Complex (RC) have differences in forest species composition, diversity, and forest floor characteristics due to an increased frequency of wildland fire activity spanning decades.

7.6.3 FOREST MANAGEMENT PROGRAM RESOURCING

Resourcing for the forest management program is provided through several funding mechanisms with varying programming requirements. Overall forest management requirements are programmed through the Garrison Environmental Requirements Build (GERB) process to outline requirements, project scopes, cost estimates, and regulatory drivers. This programming process has been integrated to work in tandem with the Reimbursable Program Tracking System (RPTS) annual work plan submittal and resourcing procedure. Personnel within (USAEC and IMCOM make funding line decisions to determine which projects will be funded and whether they are eligible to be funded through the forestry Authorized Reimbursable Account (ARA) or general environmental Management Decision and Execution Package (MDEP). ARA can be used to fund projects and actions related to commercial timber management, forest health, and forest protection while environmental funds can support more broad-based ecosystem management actions. Funding requests for special projects related to ecosystem management, restoration, or additional forest management actions can be submitted for Forest Reserve Account (FRA) funding. Funds within FRA may or may not be available any given year depending on overall forestry program expenses, income, and related obligations including state entitlements. Finally, wildland fire-related program requirements may be funded by DPW and/or

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Emergency Management (EM) MDEPs as per their approved funding guidelines and request submission procedures.

Forest management program requirements are established annually based on management objectives including timber harvest objectives and extent, prescribed burn objectives and resulting target acreage, forest inventory requirements, data management and GIS support requirements, as well as administrative, planning, scheduling, and budget support requirements. Common Levels of Support (CLS) and ability to fully accomplish outlined Service Support Programs (SSPs) performance levels also contribute to the determination of adequate program resources.

7.7 FOREST MANAGEMENT

7.7.1 FOREST MANAGEMENT PLANNING OVERVIEW

To attain desired objectives, forest management implementation requires extensive planning that integrates available forest resource data, forest stand DFCs, military training environment requirements, natural and cultural resource considerations, available financial, personnel, and time resources, and timing of action implementation. These efforts require a high level of integration, coordination, science, and considerable intuition. Management decisions and initiatives are reviewed through a multi-tiered system. The following outlines the procedure used for a cross-directorate, multi-tiered review of timber harvest areas for the installation. Each level is routed, reviewed, and approved. This procedure is applied to any type of forest management action:

a. Projected five-year forestry activities

b. Five-year harvest plan NEPA review and documentation

c. Annual DOA for timber sales (consists of multiple timber sale batches)

d. Timber sale batch (consists of multiple timber blocks) Scoping Meeting for natural resource manager and training mission compatibility review

e. Timber sale block NRSA review

f. Timber sale batch sale Report of Availability (ROA) release memorandum for final review and approval prior to sale

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7.7.1.1 FOREST MANAGEMENT UNITS/STAND DELINEATION

The FMU and forest stand data are maintained as GIS polygon features with attributed data that detail forest structure, management history, and DFC's. These GIS data are being integrated and referenced with the use of a Geodatabase that supports this INRMP and increases accessibility to forest and Conservation Management Unit (CMU) data sets.

The physical delineation of FMUs requires consideration of the component forest stands, landform, and land use including, but not limited to: forest structure (covertype and size class), topography, constructed and natural boundary delineations, unique ecosystem features, soil productivity and capacity, and existing and planned training facilities. As often as possible, distinctive features serve as the FMU boundaries and include established roads, trails, and waterways. The FMU boundaries are expected to remain constant through time, though some variations are expected with continued facility development and land use changes. Any changes in the FMU boundaries will complicate monitoring, adaptive management, and data archiving processes. FMUs are named for their sub-training area or controlled access area, and they receive a unique alphanumeric identifier (e.g., 22AA or CA18A). The FMU size reflects the area that is expected to be successfully treated and monitored. The FMUs at FAPH range in size from 7.3 – 1,889.5 acres with an average of close to 200 acres per FMU.

Recent forest stand delineation efforts have relied upon remote sensing and photo interpretation combined with recently collected forest inventory data. These methodologies evaluate the forest canopy seen in aerial photos, historic photo forest cover, and trends in conjunction with ground-truthed data to determine areas with similar structure and cover. These efforts and outputs were manually refined in 2013 for the purpose of: updating harvested and cleared area polygons, incorporating current forest inventory data clarification of structure and composition distributions, splitting forest stands coinciding with FMU boundaries, and improving overall quality of the GIS polygon representations.

Operationally, FMUs are evaluated for structure and DFC characteristics; specific silvicultural prescriptions are assigned to the various stands occurring within the FMU to ultimately blend the forest structures within the FMU to attain the overarching DFC.

7.7.1.2 100-YEAR PERSPECTIVE AND DESIRED FUTURE CONDITIONS

Forests are long in both duration and development, so realizing objectives and benefits requires a long-term planning horizon. This section describes the process of long-term forest planning and management applied at FAPH. Long-term, for this plan, is 100 years: all goals for DFC attainment, forest modeling, and silvicultural prescription timelines assume a 100-year timeframe. Forest management action plans are ideally developed in five-year increments, which affords ample opportunity for adaptive management considerations, land use changes, updated regulations, and resource status changes. This plan and management approach should be updated every five-years as needed with the development of each five-year action plan and

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annual timber availability. The actions that are implemented as a result of this plan will follow and apply NEPA procedures.

The DFC is intended to describe the condition and structure that the FMU will exhibit for a specific purpose. The structural components were broken out into specific categories including: primary and secondary tree species, average size class (large, medium, small, regeneration), general management approach (active, passive, restorative), and densities for each of the understory, midstory, and overstory (low, medium, high) (Table 7-6).

Table 7-6. Forest Management Unit Desired Future Condition Categories

CLU community* Species Code / Species		Size	Density		
			Understory	***Mid-story***	***Overstory***
Bch	Beech	Regeneration (<= 4.9”)	Low	Low	Low
COk	Chestnut oak	Small (5 - 9.9”)	Medium	Medium	Medium
Hic	Hickory	Medium (10 – 14.9”)	High	High	High
Lob	Loblolly pine	Large (>= 15”)			
Map	Maple				
Pop	Yellow-poplar				
ROk	Red oak				
Sgm	Sweetgum				
Vir	Virginia pine				
WOk	White oak				

* Any combination of one or two of the listed species. (These are ideally the most frequent one or two species occurring in the stand along with their associated tree species community.)

These DFC categories provide several benefits to forest management, and they describe a forest structure in language readily understood by FAPH forest managers. Additionally, DFC categories outline measurable characteristics that can be compared to current data; site-specific silvicultural prescriptions are then calculated to attain the DFC. DFCs provide specific requirements for both management decision and habitat evaluation purposes. Instead of general categories like “hardwood, mixed, and pine” cover types, a species combination indicates a specific forest community expected to be present in the FMU and allows managers to evaluate the presence and frequency of desired species groups. For example, whereas a red maple and sweetgum forest would meet a “hardwood” cover type requirement, it neither provides the same habitat and mast benefits as an oak and hickory forest type, nor does it require the same management approach. These species categories also compliment the Ecosystem Decision Support System (EcoDSS) Common Land Unit (CLU) categories, which facilitate a direct correlation with modeling outputs allowing for direct growth and regeneration predictions. The DFC categories also lend themselves to a simple interpretation for training structure (Figure 7-4.). Finally, these specific, measurable DFC categories

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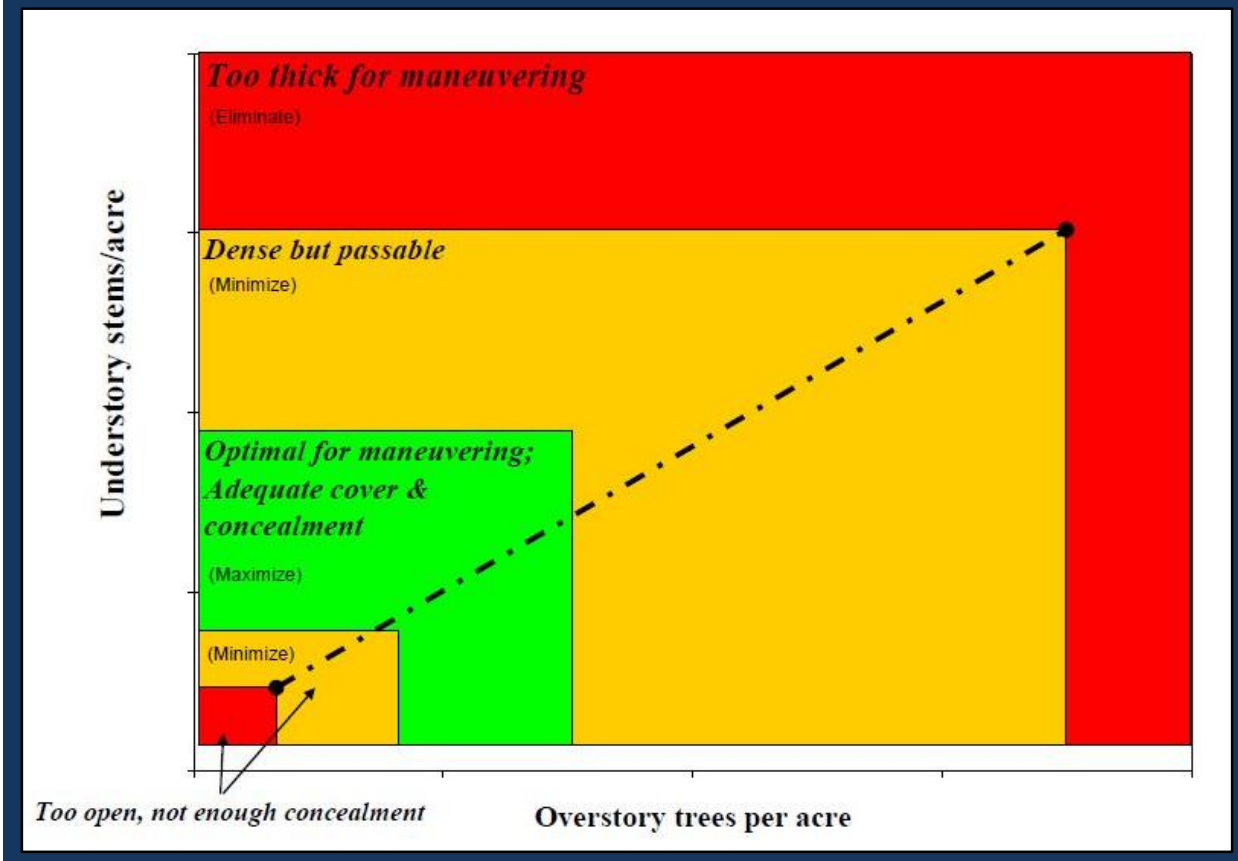
provide a clear metric for monitoring progress. Monitoring will reveal if a DFC is attainable through time and provides a foundation for adaptive management.

The DFC categories selected for any given FMU factor multiple considerations including, but not limited to the distribution of forest characteristics (cover type and structure) across each FMU, watershed and the overall FAPH landscape, ensuring adequate regeneration, soil productive capacity, tolerance of soil to management actions, unique ecological features (e.g., Special Natural Areas), training facilities, and proximity to wildlife food plots. A categorical description of the reason for selecting specific structure characteristics is also provided for each FMU. A complete list of current forest DFCs assigned in 2008 are provided along with the five-year forestry activities plan in Appendix F. FMU delineation was updated in 2013. Efforts are underway to validate and update the assigned DFCs. Finalized updates to the FMU DFCs is specified as an INRMP project will be included in the updates of this document.

Figure 7-4. Conceptual Relationship between Over/Understory Density and Military Training Suitability



Due to the nebulous nature of ecosystem management, setting clear criteria for monitoring efforts is imperative. ENRD staff coordinated internally to identify several key features that

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comprise successful ecosystem management on the installation in relation to forest management. These include:

a. productive soil capacity

b. tree growth that exceeds harvest and mortality

c. adequate forest regeneration rates

d. natural cycles of disturbance and succession

e. forest structural, species, and genetic diversity

f. maintained water quality

g. sustainable wildlife and fish populations with particular attention given to threatened and endangered species, anadromous fish, and species of greatest conservation concern as defined by the Commonwealth and occurring on the installation

h. access to and use of consumptive and non-consumptive forest products by the regional human population, including but not limited to military training, recreation, and forest product use

FAPH natural resource managers agree that when a landscape exhibits these features, then the ecosystem is considered to be healthy and successfully managed. If these features and traits do not exist, or disappear, resource managers need to examine the contributing factors to adjust the management approach and implementation.

The above criteria, general ecosystem management concepts, conservation biology, and biodiversity principles play a significant role in the delineation of the FMUs and the distribution of DFCs. The following are general considerations that were key driving concepts for the development of FMUs and DFCs:

a. Retention of existing forest structural diversity – Through the process of assigning goal DFCs, there should be no loss of the spectrum of available structure and cover combinations that currently occur on the installation. For example, if there are 50 distinct forest cover and structure combinations occurring in the delineated forest stands now (Table 7-7), then there should be no less than 50 cover and structure combinations occurring in the FMUs 100 years from now. Additionally, a diverse mosaic of all structures and covers should be available for training, wildlife, and ecosystem biodiversity needs through time. In alignment with this diversity requirement is the focus on ensuring mast-producing tree species including oak, hickory, and beech remain

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prevalent on the landscape to support healthy wildlife populations. Management action targeting retention of these desired species is an integral component of this INRMP.

Table 7-7. Comparison of Current/Future Forest Cover Type, Size Class, and Overstory Density

Category	Future Acres	% Acres (Future)	% Acres (Current)
Total FMU Acres			
N/A	66,772.5	100%	100%
Cover Type			
Hardwood	26,965.5	40%	40%
Mixed	29,341.6	44%	27%
Pine	10,200.0	15%	33%
Size Class			
Large	42,448.0	63.6%	30.0%
Medium	21,268.0	31.9%	56.0%
Regeneration	265.0	0.4%	15.0%
Small	2,791.0	4.2%	0.5%
Overstory Density			
Low	13,117.6	19.6%	43.0%
Medium	47,161.1	70.6%	
High	6,493.8	9.7%	57.0%

b. Expansion of available core areas of structural settings – Core area is a conservation biology concept that measures the size of an available habitat or ecosystem type that occurs a set distance from the border of a different habitat or ecosystem type. Core areas are particularly valuable to species that have specialized habitat needs and are less tolerant of variation. The reasoning for grouping multiple, varying forest stands into larger management units is to reduce the amount of edge occurring between forest structure types and increasing the size of core area availability over time. Figure 7-5 depicts the shift from forest stand to FMU delineation with the increase of core area.

c. Availability and continuity of structures across landscape – In addition to retaining forest structural diversity, there is also a desire to create continuous corridors of similar structures across the landscape and to ensure the availability of multiple structure and cover combinations through time and not simply an end result of 100 years of forest management. This concept directly supports the movement of wildlife across the landscape and reduces the effect of fragmentation.

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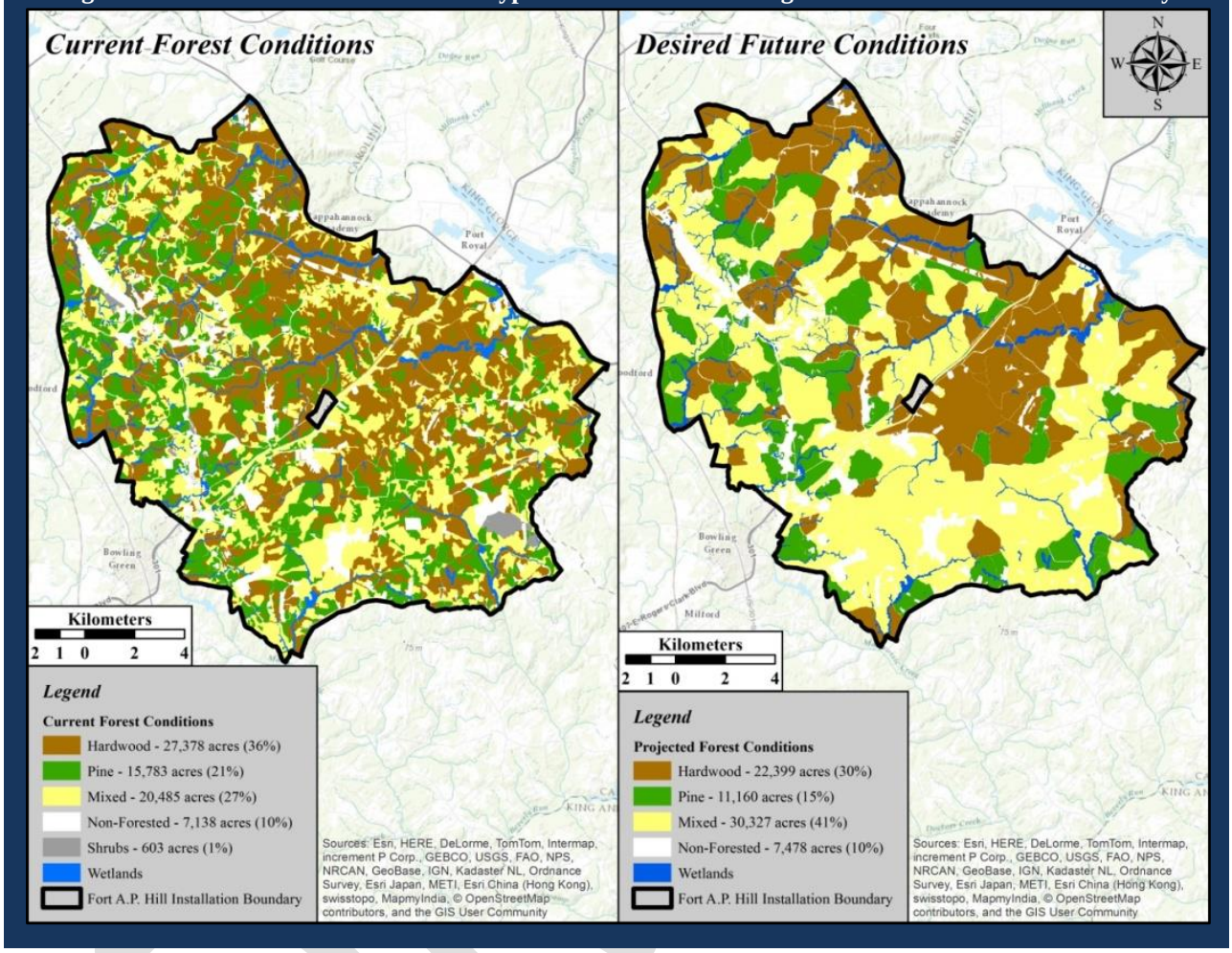
Figure 7-5. Current and Future Cover Type Distribution Reflecting Increase in Core Area Availability



d. Forest sustainability (regeneration considerations) – Active forest management is necessary to create the desired training environment and ensure maintenance of structural and species diversity across the landscape while generating a renewal resource. A key component to this diversity and forest vitality is consideration of regeneration and sapling in-growth which determines the future species composition of the stand. Creating park-like conditions with an open understory and well-spaced large trees may provide ideal training settings, but lacks consideration of the cohort of trees necessary for natural stand replacement. Appropriate regeneration will require that some areas have high stem densities of regenerating trees, which may be favorable to many wildlife species even though this condition is not ideal for most training exercises. Such conditions are temporal as the stand is successfully regenerated.

e. Unique habitat features – In cooperative surveys conducted by the Virginia DCR-DNH, the occurrence of unique ecosystem features within the installation's forested setting

were noted. Areas characterized by old-growth features were of particular interest due to their very rare occurrence in Virginia. Areas with these characteristics provide unique ecosystem functions and a unique biological resource. Due to their rarity, FAPH has been proactive in designating portions of the forest resource that will not be actively be managed with silvicultural prescriptions due to the unique structural complexity of old-growth forest types. Instead, these late seral old-growth forests (and other forested SNAs) will develop under natural processes through time with the intention of contributing to the acres on the installation and region that exhibit old-growth characteristics. These areas may be actively managed provided the resources for ecological restoration are available, or if military mission requirements so demand.

f. Consideration of the human component of ecosystem management – Ecosystem management also mandates consideration of the human interaction and use of the resources. Human use of the installation forest is multifaceted, but is largely focused on providing a military training setting, recreational (e.g., hunting and angling) opportunities, and a source of raw woody materials.

7.7.1.3 PROJECTED FIVE-YEAR ACTIVITIES

Managing on a 100-year time horizon is only realistic if approached systematically and incrementally. Recurring five-year action plans create steady movement toward long-term goals while also providing intermittent "end points" to apply Adaptive Management techniques and adjust the next five-year plan. The five-year action plan incorporates range and natural resource management objectives to establish priorities for timber harvesting and prescribed burning. It also incorporates actions that meet forest management objectives, prioritizing forest health and regeneration considerations. The five-year action plan is designed to identify management actions that could be accomplished in ideal conditions during a five-year period; in addition, intentional flexibility is included for year-to-year adjustments as needed. FAPH understands that not every parcel included in the five-year plan identified for harvest, Timber Stand Improvement (TSI), and prescribed burning will receive action due to mission changes, resource limitations, etc. Conversely, a boundary may be shifted or expanded to accommodate similar requirements.

Information gathered for decision-making purposes related to the five-year plan is acquired from multiple sources that must be reconciled for an effective plan. Mission-driven forest setting requirements are presented through direct communication and coordination with Range Control; preferred locations, tree spacing and training type suitability are addressed. Tree species and ecosystem suitability also need to be considered. For example, forest stands composed primarily of Virginia pine are not well suited for off-road vehicle maneuvers. Virginia pine that occurs in a maneuver corridor may need to be cleared and replanted with a species more suitable for wide spacing, like shortleaf or loblolly pines, yet Virginia pine can be maintained in other areas for their ecological benefits. Need for natural resource enhancement, specific plant or wildlife habitat management requirements, or other restoration projects should be coordinated at the bi-monthly natural resource planning meetings or in direct communication with program managers.

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Identified mutually beneficial interests and initiatives should be pursued within each five-year action plan. Trainers have identified and communicated a need for more vehicle accessibility within the forested setting which features widely spaced trees and a maintained grassy understory. Likewise, the installation fish and wildlife program identified desire for a similar forest structure to support wildlife management objectives. Therefore, forest management initiative focused on addressing these mutually beneficial requirements in the five-year action plan.

Timing and location of forest management activities are planned according to several guidelines; for example, some actions are initiated to support a specific purpose or construction activity and must be concluded according to a project timeline. Another harvest planning consideration is to spread harvest sites across multiple MTAs and the RC, as much as possible. This allows for operational flexibility in scheduling and moving loggers to various sites as needed to avoid training conflicts or wet weather site damage. Within the five-year plan, the timing and location of timber harvests is weighed against the frequency and evidence of prescribed burns where charred timber may reduce marketability and value. Prescribed burns should follow the completion of a timber harvest unless otherwise specified to meet management objectives, such as oak regeneration or fuel reduction.

The current five-year plan is appended to the INRMP (Appendix F). In accordance with 32 CFR Part 651, Army Guidance with Timber Sales (2004), and the Army Wildland Fire Policy Guidance (2002), NEPA requirements for forest management activities occurring on the installation include the preparation of an Environmental Assessment (EA) to assess and evaluate environmental impact. The EA completed for the INRMP and associated actions meets this requirement and covers forest management actions. Timber clearing done for construction requirements is covered under the EA completed for the specific project.

7.7.1.4 ANNUAL WORK PLAN

The annual work plan is developed based on the five-year action plan and incorporates any new requirements and resource availability considerations to create a realistic plan of action for a given fiscal year. This plan considers work that may remain from the previous year as well as new work associated with current timber availability, TSI, forest inventory, prescribed burn plans, and program administration. Program administration tasks include all of the supporting actions required to accomplish forest management actions including planning and coordination meetings, document preparation, NRSA development and tracking, activity scheduling, GIS data development, budget requests and management, equipment purchase and maintenance, and travel/training.

Annual work plan reporting includes an action-based work plan for INRMP goal and objective tracking. Additionally, a DOA for timber harvesting needs to be provided to the USAEC and USACE for budgetary planning. The annual work plan also provides installation foresters with the information needed to develop budget requests. The annual work plan is reported using the

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GERB project submission and funding request procedure and detailed in the Army Environmental Reporting Online (AERO) RPTS developed and administered by USAEC. Budget requests are entered in the general categories of management, access roads, support, reforestation, equipment, and fire protection. USAEC uses the DOA provided timber volume and value information and the categorized budget requests submitted on RPTS to develop annual operational budgets and allocations for Army forestry programs. Annual work plan action completion should be tracked and reported quarterly for INRMP tracking and an end-of-year report is provided to USAEC.

7.7.2 SILVICULTURE

7.7.2.1 DEFINITION

The Society of American Foresters defines silviculture as "the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis." At FAPH, this requires an understanding of forest and tree growth dynamics, disturbance regimes, hydrology, pathology, and entomology in addition to understanding the needs of the landowner, in this case, the Army.

7.7.2.2 SILVICULTURAL HISTORY OF FAPH

Timber harvesting has occurred on the installation since the land was acquired by the U.S. Army in the mid-1940s. Harvest history record keeping has been concentrated primarily on the loblolly pine plantations with harvest, planting, and thinning records. Since 1974, more detailed information has been maintained to track volume removal and acres by harvest type. Over the past five years, FAPH has harvested an average of 761 acres per year, removing an average of 1,229 MBF of pine, 3,490 tons of chip-n-saw pine material, and 942 MBF of hardwood annually. Around 1997 harvest trends shifted from pine-focused management (i.e., clearcutting, thinning, and planting) and diversified into shelterwood, seed tree, and selection harvests (Figure 7-6). Geographically, harvest history tracking using GIS was initiated in 2006. The first phase of this effort was in attributing the current forest cover data through the forestry geodatabase. Additionally, a stand-alone shapefile documenting actual harvest block boundaries and related prescription, sale contract information, and upcoming harvest block preparation has been created to track harvest activity across the installation, starting with the 2006 timber availability blocks. Continuing this effort creates a visual product that highlights areas that have not received active management and will help to fine-tune and finalize FMU and Resource Protection Area (RPA) delineation.

7.7.2.3 SILVICULTURAL SYSTEM DESCRIPTION AND GUIDELINES

A silvicultural system is a planned series of treatments for tending, harvesting, and re-establishing a forest stand. They are categorized by the number of age classes that characterize

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the resulting stand and forest structure. The age class structures are generalized in two categories: 1) even-aged – a stand of trees that are about the same age (usually within five to ten years). An even-aged forest may be a natural or artificially regenerated stand with trees aged usually within +/- 20% of the rotation age. 2) Uneven-aged – a stand with many ages of trees present (technically more than two age classes) and considerable differences between the ages.

7.7.2.3.1 REGENERATION TREATMENTS

Regeneration treatments include clearcut, seed-tree, and shelterwood methods to create even-aged structures. Single-tree or group selection methods are used to create uneven-aged structures. The intent is to mimic a natural disturbance regime that allows sunlight to reach the forest floor in varying quantities to trigger regeneration of desired tree species.

Clearcut: This method removes all merchantable trees from a stand. Clearcutting is primarily used when trees need to be removed for construction or training purposes but is also applied as a silvicultural treatment implemented to regenerate a forest stand. Stands dominated by Virginia pine in areas expecting high training utilization are targeted for this type of silvicultural application since Virginia pine have a short life expectancy, do not respond well to thinning, and are prone to wind-throw. Clearcut areas are quickly regenerated by saplings already established in the understory or natural seeding and sprouting.

Seed-tree: This method removes all merchantable trees in a stand except approximately five to ten trees per acre. This harvest method is best utilized in pine stands; remaining trees are of good form, vigor, and are abundant seed producers. These trees are left to provide seed to regenerate the stand. Once the new stand is established, the seed trees can be removed; however, generally, there is not enough volume to justify a timber sale. This method is the primary regeneration harvest used in the Range Complex, which is subject to wildfires. It is important to have an existing seed source available in the event new stands are burned off.

Shelterwood: Mature timber stands, containing a high percentage of desirable species (e.g., loblolly pine or oak) are harvested to where approximately 50 to 75 trees per acre remain in the stand. This allows adequate sunlight to reach the ground and provides good germination conditions for the seed released from the residual trees. As with the seed-tree method, trees remaining un-harvested are vigorous, good quality seed producers.

Selection (Single tree or Group): Generally, stands with an abundance of mature timber and a substantial under-story of desirable tree species are given priority for this treatment. On FAPH, this method is primarily used in hardwood stands. Single trees or small patches of trees are removed; this opens the canopy, which releases the existing desirable species or provides favorable conditions for the regeneration of desirable species, (e.g., oak, hickory and yellow-poplar).

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7.7.2.3.2 INTERMEDIATE TREATMENTS

Intermediate treatments are used to increase the quality and growth of a stand prior to the age where the stand needs to be regenerated. Several types of harvesting can be used; most often the types used on FAPH are pine thinning and overstory removal.

Thinning: Commercial thinning is executed in timber stands when the trees have reached a merchantable size. Although loblolly pine (20-40 years old) is the favored species for thinning operations, Virginia pine stands may also be thinned to reduce overstocked growing conditions and to open the forest stand for training availability. Thinning will remove up to two-thirds of the trees in a stand. The trees removed are either the smaller and less vigorous trees or undesirable species. This results in more growing room for the remaining high quality trees that will respond with increased growth and vigor to create the final, mature stand structure.

Overstory removal: This operation is often a re-entry into a stand that has been harvested using a shelterwood or seed-tree method. This is accomplished once new trees, that have started to grow under a shelterwood or seed-tree harvest, reach five to ten years old and the shelter trees and seed source are no longer needed by the regenerating seedlings. The removal of the shelter trees opens the stand to sunlight and results in better growing conditions for the new stand of trees. Overstory removal is also used in stands that exhibit characteristics of overstory mortality and advanced regeneration. Though these stands may not have previously received a shelterwood harvest, the overstory stems are similarly removed to release the understory trees.

7.7.2.3.3 SITE PREPARATION AND REFORESTATION

Following the completion of the timber harvest, several actions are taken to reduce visual impacts, minimize erosion, and improve immediate accessibility. Timber harvest contracts specify how loggers handle residual logging debris, including: lopping debris below a certain height, required maximum stump heights, spreading debris throughout the stand, and/or piling the majority of the debris on the log decks. Log decks and skid trails are evaluated for rehabilitation and site stabilization needs.

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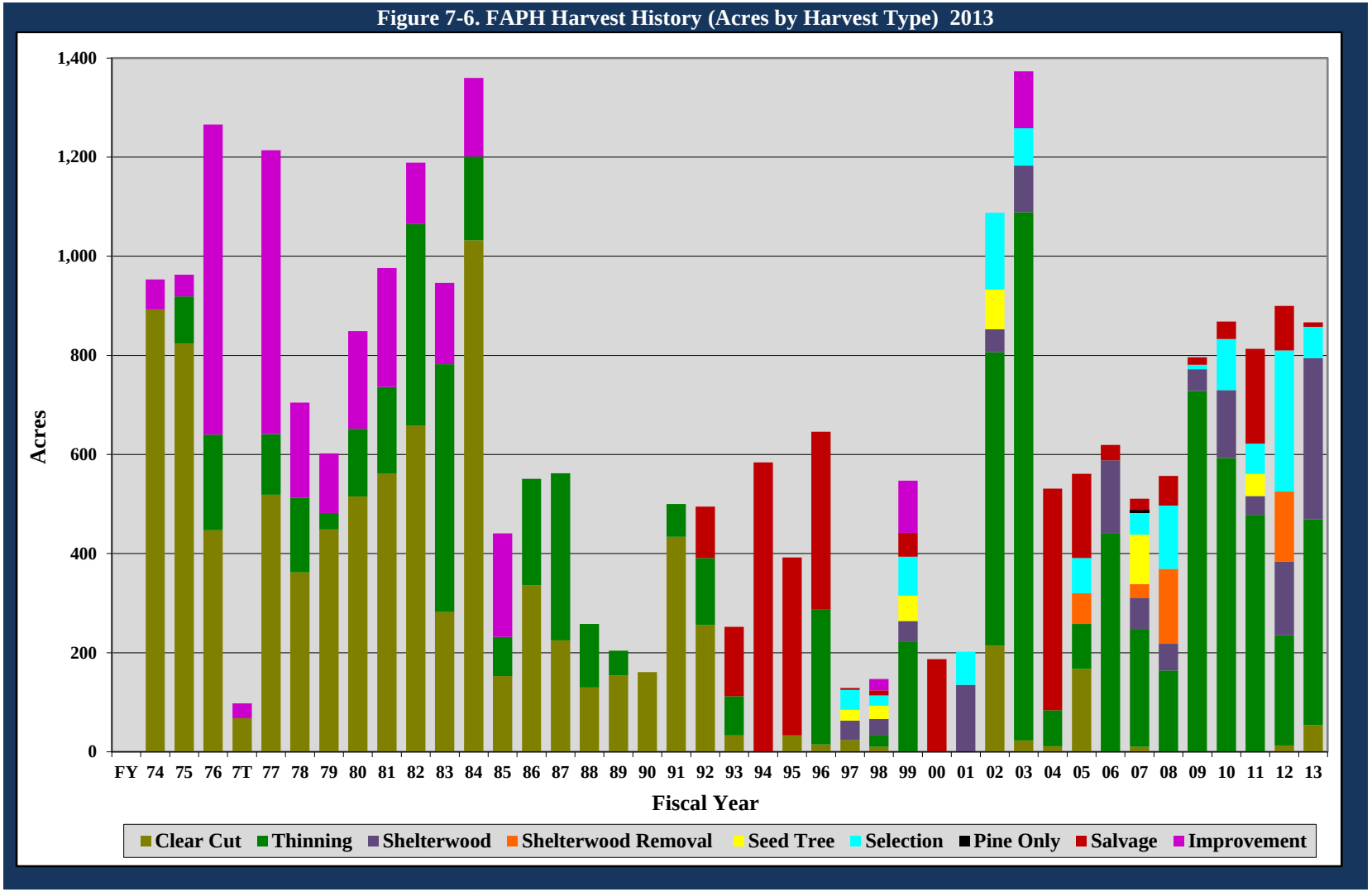
Figure 7-6. FAPH Harvest History (Acres by Harvest Type) 2013
Acres
1,400
1,200
1,000
800
600
400
200
0
FY 74 75 76 7T 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13
Fiscal Year
Clear Cut
Thinning
Shelterwood
Shelterwood Removal
Seed Tree
Selection
Pine Only
Salvage
Improvement

Reshaping and seeding are then completed as needed. In the year following a harvest, each site ideally receives a prescribed burn both as a site preparation technique for regeneration and to help reduce logging debris. Debris that has been piled on the log deck can be burned, made available for mulching, or used for biomass utilization initiatives. Recent increase interests and market trends indicate that debris pile sale and/or utilization is likely on the horizon. Logging bid and sale contracts now contain a line item for chips as a forest product. The increasing availability of such a market and logging crews with mulching capacity continues to improve debris utilization as well as logging site aesthetics and accessibility.

The DFCs ascribed to FMUs on the installation identify specific cover types or species communities (e.g., white oak – red oak) that the ENRD would like to maintain on the installation landscape. To ensure that these species groups/communities are present as successful overstory components, the Forestry Branch ensures that those species are successfully established as seedlings, advanced regeneration, and in the mid-story of the appropriate FMU/DFC. To this end, inventory efforts include understory and midstory species composition measures. These data help forest managers determine timing and harvest levels for canopy opening.

Oak species regeneration is of particular concern as oak is currently a major component of the hardwood overstory at FAPH. General trends show that oak regeneration is often out-competed by shade-intolerant species following a timber harvest and does not regenerate in adequate numbers to replace the overstory population. Oak has innate value to the installation, including provision of acorns as a food source for local wildlife, contribution to the forest overstory and biodiversity, tolerance to frequent wildland fire, high market value of the wood, and tolerance of training impacts. Therefore, particular attention is given to the monitoring and management of oak regeneration on the installation. Oak regeneration surveys are conducted in areas that currently have oak as a major component of the overstory and where stands are in a FMU with an oak-dominated DFC. These surveys determine the stems per acre and size class of oak species in the specified stands. These data are used to prioritize prescribed burns and design harvests or pre-commercial TSI treatments which provide oak regeneration advantages over competing species. Forestry Branch staff remain current with ongoing oak regeneration research, monitor the establishment and success of oak species as a forest component, and consider herbicide vegetation control where fire or mechanical control has not, or cannot, adequately control oak competition.

7.7.2.3.4 FOREST IMPROVEMENT

<u>Pre-Commercial Thinning</u>: Pre-commercial thinning silvicultural treatment is used to reduce tree density in young stands and is carried out before the stems reach merchantable size. The intent is to concentrate the site's growth potential on fewer trees, thus increasing average diameter, retaining a higher live crown ratio, creating opportunities for future commercial thinning activities, improving stand operability and accessibility, and enhancing wildlife habitat. The released trees would grow faster and reach a larger size at maturity. Vegetation and small trees would be removed using brushsaws and chainsaws or a severe-duty shredder in combination

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with these hand tools. Felled and shredded vegetation would remain distributed throughout the stand.

Crop Tree Release: This type of non-commercial cut improves the health, vigor, and growth of the selected hardwood crop trees by removing the vegetation surrounding the selected tree to increase the availability of light, water, and nutrients. This would be accomplished by felling all stems required to allow full sunlight on at least three of four sides of the selected crop tree's crown. Felled material would remain scattered throughout the stand or hinged on the stump for wildlife habitat enhancement. Since this operation is intended to improve timber quality, the selection criteria for crop trees would include larger trees that have healthy crowns and sound stem origin. They would be high-quality trees with no apparent defects or compromised health status, of high potential commercial value, of high wildlife value, species well adapted to the site, and with expected longevity of no less than 20 years.

Understory Treatments: These treatments are intended to manage the light regimes and species compositions occupying the sub-canopy structure within a forest stand. This can involve the removal of shade-tolerant, undesirable midstory species through mechanical or chemical treatments. This system is typically used for oak species management at FAPH and involves a combination of mechanical (e.g., chainsaw felling and girdling) and/or chemical treatments. These methods quickly increase the light reaching the newly established oak seedlings or advanced regeneration allowing higher chance for success of oak to become established as the dominate species in the future stand composition. These treatments can also be used to increase visibility within the forest for military training purposes.

7.7.3 SALE OF FOREST PRODUCTS

7.7.3.1 INTRODUCTION

Timber sales are a significant action undertaken by the Forestry Branch. They shape the landscape, ecosystem, and training environment while providing a renewable resource to local markets and generating revenue for the Army and local counties. Timber sales also require extensive planning and preparatory work prior to implementation.

7.7.3.2 LOCAL ECONOMY AND MARKETS

The ability to sell timber is driven by the available regional markets proximal to the installation. Additionally, timber product prices are driven by market preferences and related supply and demand.

The timber market surrounding FAPH is robust. There are several forest product facilities (sawmills, chip mills, and pulp mills) within a 50 mile radius of FAPH, which collectively provide a demand for all products produced on the installation. In addition to the various mills, there are independent loggers and forestry consultants/brokers servicing the area.

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Although the mills are competitors, they may also be customers of one another when they have purchased blocks containing some material that they do not utilize, or when economic conditions make it more favorable to enter into agreements. Independent loggers deliver to a wider selection of mills driven strictly by the economic conditions at the time.

FAPH currently sends advertisements to 18 mills and 28 independent loggers or brokers. These numbers vary annually as mills or loggers become established or go offline.

Recent recession and related housing bust economic drivers devastated the pine sawlog market. Fortunately, the Virginia and South Carolina to China pine log market has re-opened. The remaining markets have remained fairly strong. For the short term, an extended period of adverse winter weather would create a stronger demand with resulting higher prices for stumpage. For the longer term, legislative incentives for biomass utilization have, and will continue to create new markets for what have been low value products. Dominion Virginia Power Company is in the process of bringing up five co-generation plants that burn wood in Virginia. This is expected to create a state-wide demand for chips. There have also been pellet fuel plants opening in the Commonwealth which created potential markets for otherwise sub-merchantable woody materials.

7.7.4 TIMBER SALE PLANNING

Timber sale planning and preparation entails a multiple-step process that requires a high level of oversight and tracking to ensure all requirements have been met. These requirements include site selection, initial delineation, scoping packet development and distribution, NRSA document development and comment tracking, NEPA requirements, correct tree-marking implemented to meet prescription requirements, boundary layout appropriate to honor RPA and other sensitive resource buffers, installation boundary proximity consideration for anti-terrorism measures, physical security and visual screening, skid trail and log deck layout, timber cruising, pre-harvest plan maps, volume table development, bid packet submission, USACE coordination, logger access coordination, contract oversight, harvest timing and scheduling, Range Control coordination, final harvest inspections, site rehabilitation needs, post-harvest forest inventory, and GIS and database updates. Forestry Branch has developed comprehensive tracking mechanisms to ensure that all requirements are appropriately met prior to action implementation and final contract close-out.

7.7.4.1 REGULATION OF HARVEST ACTIVITIES WITH SUSTAINABLE ANNUAL HARVEST

Sustainable harvest is attained when net growth exceeds wood harvest (removals) for products on timber land. This measure, however, conveys no information about quality, biodiversity, other attributes of ecology, or management objectives, and so should be considered in conjunction with other indicators as part of an overall analysis of objectives for forest ecosystem sustainability. This broader approach to sustainable harvesting includes considerations related to

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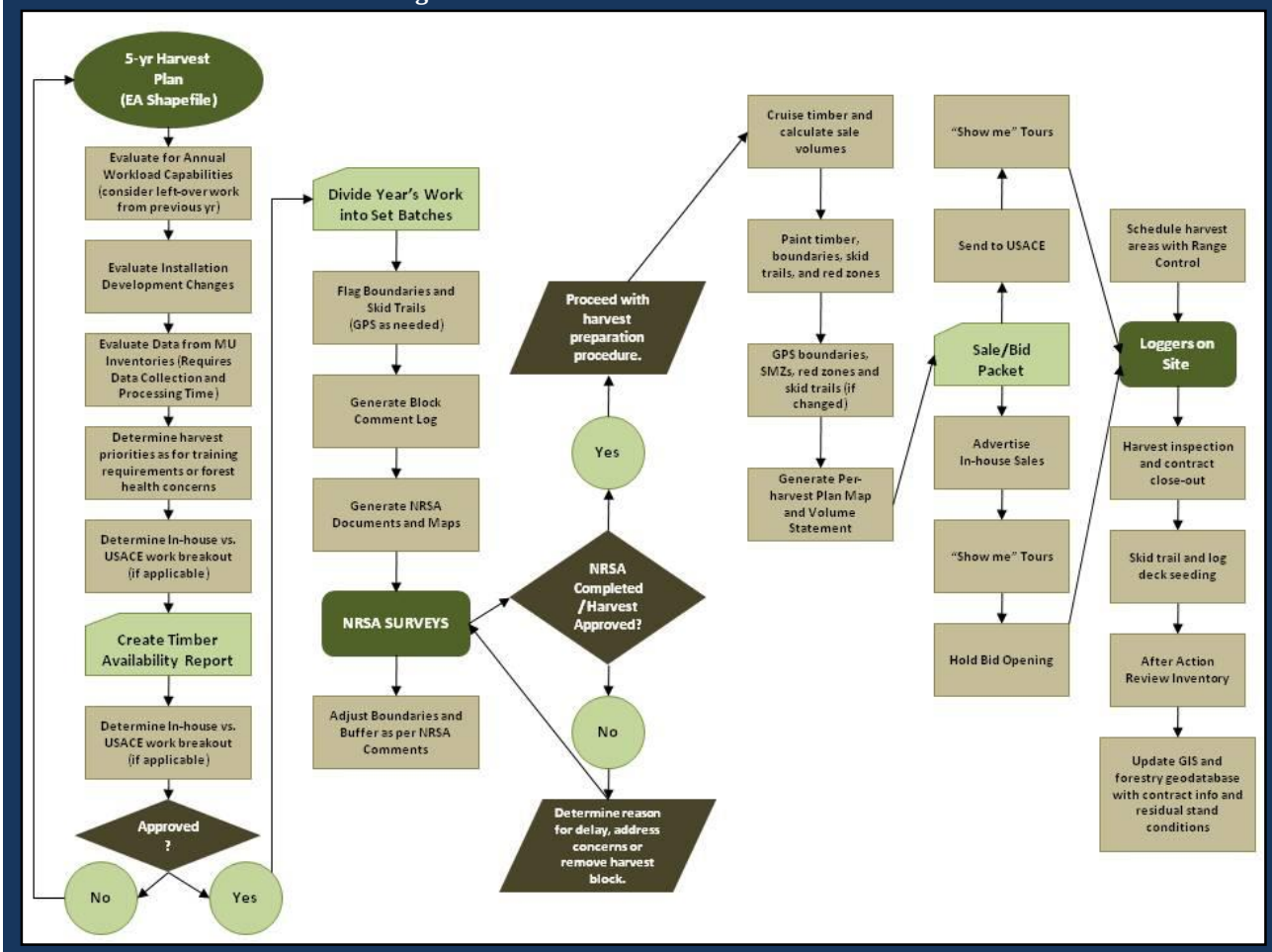
acreage in an even-aged versus uneven-aged production capacity and structure, the vegetation community and its long-term sustainment in the landscape, and the stand types that are being harvested to attain long-term ecosystem management and forest structure goals. Additionally, the DFCs associated with each FMU are components of a larger landscape management objective for creating a targeted balance of forest stand and structure types through time. Continual progress of applying management actions and prescriptions to move towards established FMU DFCs also ensures sustainability of forest cover and structure types across the installation.

Figure 7-7. FAPH Timber Harvest Workflow



The harvesting of forest products is governed by the management objectives established in this INRMP and the identified sustainable annual harvest levels. These management guidelines have been structured to ensure that quality training and multiple use benefits are derived from the forest resource. When maximum sustainable annual harvesting levels are achieved, optimal age class diversity, tree growth, forest cover type and structure diversity, and production of forest

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products are realized. Forest health is also improved proportionately as tree growth and vigor are increased. These production guidelines matched with military training landscape requirements result in optimal management of the FAPH forest resource.

Equal annual levels of harvesting provide consistent annual program support requirements and relatively predictable returns from the sale of forest products, in turn, funding additional forest management operations. Consistent funding ensures stability in the timely application of forest management treatments including timber stand improvements, commercial harvests, and prescribed burning.

Determination of the sustainable annual harvest is accomplished by one of the following two methods:

a. Volume Method – This method requires the determination of average net annual growth per forest strata type. This is accomplished through the establishment of permanent inventory sample plots in proportion to the percentages of acreages of various forest strata types. These CFM plots are measured at periodic intervals (usually five years) and all trees are tagged for future identification. Measurement techniques must be identical in successive surveys to ensure consistency of metrics. The differences in the measurements between successive inventories represent net growth, after adjustments for mortality and new in-growth have been made. All data must be organized and summarized separately by forest types and adapted to an annual basis. FAPH utilizes a methodology that reflects the USFS FIA methodology. This sampling and data analysis is labor intensive, only represents a small sampling of the forest strata acreage, and completion is based upon available funding.

b. Area Method – Under the area method, equal amounts of forest area (acreages), rather than net average growth, are harvested on an annual basis. This approach considers acreage of board forest cover types and their related rotation age to determine what portion of the acreage can be harvested annually to ensure continual productivity without exhausting the resource.

$$Y = A/R$$

Where: Y = Annual Harvest
A = Forest Type Acreage
R = Rotation Age in Years

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Table 7-8. Area Method Annual Harvest Acres by Forest Stratum for FAPH				
Stratum #	**Stratum Code**	**Acres**	**Rotation Age**	**Annual Acres**
3	Hdwd-Small-Low	659.6	100	6.6
4	Hdwd-Small-High	646.6	90	7.2
5	Hdwd-Large-Low	8,214.3	100	82.1
6	Hdwd-Large-High	16,446.0	90	182.7
7	Mixed-Regen-Low	46.0	70	0.7
9	Mixed-Small-Low	1,154.9	70	16.5
10	Mixed-Small-High	1,570.6	70	22.4
11	Mixed-Large-Low	5,078.1	70	72.5
12	Mixed-Large-High	10,201.9	70	145.7
13	Pine-Regen-Low	129.2	70	1.8
15	Pine-Small-Low	858.8	50	17.2
16	Pine-Small=High	2,322.5	50	46.5
17	Pine-Large-Low	4,473.1	50	89.5
18	Pine-Large-High	7,964.8	50	159.3
20	P.Pine-6-10-Unthinned	142.9	50	2.9
21	P.Pine-11-19-Unthinned	1,047.0	50	20.9
22	P.Pine-11-19-Thinned	87.3	50	1.7
23	P.Pine-20-29-Unthinned	2,146.6	50	42.9
24	P.Pine-20-29-Thinned	251.3	50	5.0
25	P.Pine-30+-Unthinned	954.2	50	19.1
26	P.Pine-30+-Thinned	1,080.6	50	21.6
			TOTAL	**965**

In comparison, the average acres harvested annually at FAPH over the last ten years is 703 acres with an average of 789 acres over the most recent five years. Similarly, the average annual volume harvested is 1,176 MBF and 5,430 cords of pine and 682 MBF and 2,468 cords of hardwood. These levels are typical of current harvest prescriptions and methodologies and those expected within the next five years.

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7.7.4.2 ANNUAL HARVEST SCHEDULE

The annual harvest schedule is formulated to identify the sequence of FMUs to be harvested for the impending five-year period. This harvest schedule was developed by prioritizing FMUs with large acreages of over-mature or over-stocked timber conditions (both pine and hardwood), desired training setting requirements, oak management or other wildlife habitat management requirements, and traditional pine plantation management timing while also utilizing past harvesting history, providing for dispersal of harvests among FMUs and MTA/RC, and balancing total acreages of scheduled FMUs on an annual basis.

7.7.4.3 FOREST ACCESS TRAILS

An extensive system of roads, tank trails, and forest (training area) access trails occur across the installation. Though these trails occur frequently on the landscape and are suitable to support forest management actions, at times Forestry Branch may be required to create a temporary forest access trail to gain access to a designated timber harvest site. These trails are intended to be temporary in nature but require a cultural resources survey prior to soil disturbance and will require utilization of BMPs for forest access road design. Coordination with ITAM is conducted via the Scoping Meetings to ensure that the location of trails is compatible with military use of the land. Once the harvest is complete, any trails Forest Access Trails created that have no military training value will be restored by the Forestry Branch, the Timber Harvest Contractor, or other third party contracted to do so. If a training value for the trail is identified, the ITAM program will become responsible for preparation and maintenance of the trail for training use. Additionally, any access trail that may be proposed to enter the installation from the perimeter must be vetted and approved by FAPH Anti-terrorism and / or Physical Security Office prior to implementation.

7.7.4.4 TIMBER SALE PREPARATION

Once the annual timber availability has been determined, it is broken into sale batches comprised of smaller portions of the annual availability. Each batch becomes a focus for field preparation and NRSA review. Refer to Figure 7-7 for a depiction of the timber harvest preparation workflow. The following series of actions prepares the blocks for the NRSA process:

a. Schedule all field preparation activities through the Range Facility Management Support System (RFMSS) in accordance with FAPH Regulation 350-1, Training Regulation

b. Harvest boundaries initially delineated with flagging and within GIS

c. Primary skid trail locations delineated with flagging and within GIS

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d. NRSA documents generated with general location and sensitive resources maps

e. Timber Scoping Packet developed and distributed

f. Timber Scoping Meeting completed for harvest batch discussion and review

g. NRSA surveys initiated

h. Block progress reports updated to track preparation activities

i. NRSA progress reports generated to track NRSA reviews and comment completion

Once the NRSA process is completed, the blocks are prepared for sale. A Record of Environmental Consideration (REC) is generated for any harvest area that was not already included in the five-year plan or covered under an existing EA. The following series of actions prepares the blocks for final sale:

a. Finalized harvest boundary painted and documented using GPS/GIS

b. Skid trail painted and documented using GPS/GIS (if different from original layout)

c. Timber marked and cruised

d. Volume tables generated

e. Pre-harvest plan developed

f. ROA memorandum developed, reviewed by ENRD, DPW, and DPTMS and signed by ENRD Chief

g. Bid package with volume tables and pre-harvest plan maps forwarded to the USACE

7.7.4.5 TIMBER SALE CONTRACTS

Timber sale contracting at FAPH is predominantly handled by the USACE Norfolk District Office as a real-estate disposal agency. Once a bid packet has been submitted to USACE, the sale is announced and prospective bidders are encourage to attend a pre-scheduled timber tour to view the sale blocks. The USACE keeps FAPH informed of the bid timeline, opening, and results. The Forestry Branch then schedules and hosts a logger's in-brief, conducted by the USACE representative. This in-brief informs and educates the logging supervisor of the installation policies and guidelines related to safety and site hazards, environmental concerns,

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hazardous materials handling, spill response, access and vetting requirements as per FAPH Regulation 190-13 Installation Access, and other installation processes and procedures to follow or be aware of during logging operations.

The Forestry Branch supports timber harvesting by scheduling the MTAs and controlled access areas needed for the logging operation and serving as a point-of-contact (POC) for appropriate co-use requests for the RFMSS in accordance with FAPH Regulation 350-1, Training Regulation. Additionally, Forestry Branch personnel conduct periodic site visits and coordinate logger movement between harvest blocks. Any concerns related to the progress of harvest activities are forwarded to the USACE representative who serves as the Contracting Officer's Representative (COR) and can coordinate directly with the logger for requests or operational changes. The USACE COR will also coordinate periodic site visits to evaluate progress, collect timber weight tickets, and deliver tickets for log load tracking.

The timber sale contract outlines the sites, estimated timber volume available for purchase per site, and specifications for harvest implementation and site rehabilitation including specified BMPs. In effort to remain stewards of the installation ecosystem and avoid water quality impacts, FAPH stipulates that loggers operating on the installation must be Sustainable Harvesting and Resource Professional (SHARP) certified through the Virginia education and certification program. SHARP certification educates loggers and forestry professionals on BMP considerations and implementation guidelines. Periodic site visits occurring throughout the duration of the harvest operation monitor for contract compliance and application of BMPs. Per AR 405-90, installations are authorized to sell standing timber with an estimated value under $1,000. Additionally, the installation may conduct larger in-house sales with proper justification, notification, and other supporting documents that may need to be submitted to proper authorities for approval. In-house sale efforts should be coordinated with USAEC personnel to ensure current approval requirements are met.

7.7.4.6 EMERGENCY HARVESTING

A rapid response to storm or fire damage and forest pest outbreaks (e.g., southern pine bark beetle or gypsy moth) helps reduce the extent of infestation and avoids low value salvage cuts to allow for potential financial return, or cost minimization, for this resource protection activity. This can be facilitated through the use of a small, negotiated timber sale authority or existing contract modification and the implementation of an expedited NRSA survey process. A REC is completed prior to harvesting for any proposed treatment of areas infested with forest pests, storm damage clean-up, or fire damaged timber.

Once the forest resource has been impacted by a pest outbreak or other damaging agent, forestry personnel will consider mission, extended forest health impacts, other natural resource considerations, and potential commercial value of impacted timber. If it is determined that a salvage operation is feasible and in the best interest of the forest resource and mission, the area will be mapped and timber cruised. The need and justification for the proposed salvage with

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target response timeline will be documented by Forestry Branch and reviewed by DPTMS Director, ENRD Chief and other natural resource program managers for impacts or survey requirements. Volume estimates and ROA memorandum of approved, prepared sale area will be provided to USACE. Any severe weather or other event that occurs on the installation resulting in any tree damage will be reported to DPW ENRD in order to initiate Forestry evaluation and follow-up management actions as needed.

7.7.4.7 OTHER RESOURCES CONSERVATION

7.7.4.7.1 WATER QUALITY

To meet all statutory requirements for water quality in an efficient and practical manner, FAPH implements an enhanced RPA policy whereby a 100-foot "no disturbance buffer" is established around all streams (intermittent and perennial) and wetlands when conducting forest regeneration harvests. A 50-foot "no disturbance buffer" is established around all streams (intermittent and perennial) and wetlands when conducting commercial forest thinnings. Exceptions to this enhanced RPA policy may be allowed on a case-by-case basis to directly support military mission requirements (e.g., line of sight), manage invasive species, conduct specific wildlife habitat management practices, and/or meet other approved special management requirements. Non-commercial forest improvement actions will also apply a 50-foot no disturbance buffer with the exception of mechanical hand-felling of vegetation which may be applied within the RPA. All actions will be reviewed for potential impacts on water quality through the NRSA process.

Furthermore, FAPH shall implement VDOF BMPs for Water Quality (2011) to maintain water quality standards during and following forest management activities. It is FAPH's goal to consider, apply, meet or exceed the management guidelines and recommendations outlined in the BMP handbook. While all BMPs will be administered where/when appropriate, the more common BMPs typically implemented are:

a. Retaining vegetated buffers along wetlands and streams within timber harvest areas

b. Stabilizing disturbed areas following a forest management activity (e.g., log deck, forest access trail, firebreak)

Commercial loggers conducting timber harvest operations on FAPH must have completed the Virginia SHARP certification program that trains personnel in BMP specifications and application. The logging site specifications also state that Virginia BMPs will be applied. BMP specifications are expected to be applied by the logger and verified through site inspections by the Installation Forester or USACE Contracting Officer (KO) or representative.

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Table 7-9. Virginia Forestry BMPs for Water Quality Implemented on FAPH	
TIMBER HARVESTING	
VDOF BMP Category 1 – Forest Roads	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Intermittent or perennial streams, as well as certain ephemeral drains, should be crossed using bridges, culverts or fords. Cross as close to a right angle as possible. Structures should be sized so as not to impede fish passage or stream flow.	• No stream crossings shall occur within forest harvest blocks. If unavoidable, as due to a construction clearing harvest requirement, identified stream crossing BMPs will be applied.
VDOF BMP Category 2 – Skid Trails	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Bladed or dozed skid trail grades should not exceed 25%. However, steeper segments may be required to avoid boundary lines, sensitive areas, or other areas not accessible using skid trails of lesser grades. Allowances for skid trail grades of up to 35% for short segments can be acceptable. If steeper grades are necessary, practices must be used to prevent concentrated water flow that causes gullying. Skid trails should not be constructed on sidesteps exceeding 60%. If it is impossible to limit exposure of mineral soil, alternate systems, such as extra cable length, cable yarding or others, should be considered.	• Timber harvesting is limited to areas that have < 40% slope • Laps may be emplaced along bare soils on skid trails at the direction of the Installation Forester when necessary.
• Overland and dispersed skidding on steep slopes should not exceed 35% or when bare soil areas provide potential for channelized flow.	
• Avoid skidding in a streambed	• FAPH Forestry pre-designates primary skid trails as part of the harvest site planning; to include favoring skid trail placement on high ground, following contours, minimizing skidding straight up and down slopes, no stream crossings, no streambed skidding, and no skidding within SMZs.
• Skid trails should be located outside the SMZ.	• All skid trails will be located outside of the RPA

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VDOF BMP Category 2 – Skid Trails (cont.)	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Any skid trail that must cross a perennial or intermittent stream or drainage ditch should use a bridge or culvert of acceptable design. Logs shall not be dragged through a stream of any type.	• Only existing, permanently maintained stream crossings are used for transporting harvested timber. FAPH's enhanced RPA policy prohibits forestry activities within streams, wetlands, and associated buffers.
• Skid trail crossings of any stream channel should be as close to a right angle as possible	
• Turn water out of skid trail at least 25 ft. prior to stream crossing.	
• Rutting should be avoided whenever possible and especially where it causes channelized erosion. If rutting is unavoidable, concentrated skidding may be used to reduce the amount of disturbance. Site preparation should be used to ameliorate excessively compacted or rutted sites.	• The USACE timber harvest contract specifies that any rutting over six (6) inches will be reported for potential cultural resource protection. • The logger conducting timber harvest operations on FAPH is contractually required to repair sites rutted by logging equipment.
• A permanent vegetative cover should be established upon exposed soils that are greater than or equal to 5% slope, or less if soil type is highly erodible.	• Logging debris may be scattered on exposed soil to minimize erosion or gullying.
• Prior to seeding, install all necessary water control structures, such as waterbars, broad-based dips and turnouts.	• FAPH Forestry will stabilize all exposed/disturbed timber harvest areas following completion of the timber harvest (within 30-45 days).
VDOF BMP Category 22 – Re-vegetation	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Select a seed mix appropriate for the conditions and the objectives for future use of the site. Most of the species in the BMP manual tables are available in Virginia.	• FAPH Forestry will stabilize all exposed/disturbed timber harvest areas following completion of the timber harvest (within 30-45 days).

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VDOF BMP Category 22 – Re-vegetation (con't.)	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Seed immediately following harvest using the seasonal seed variety mix and application rates provided in the BMP manual tables. Choose a mixture of main crop, legumes and grain/grasses to equal a total of 100 to 150 pounds/acre seeding rate.	• FAPH Forestry will stabilize all exposed/disturbed timber harvest areas following completion of the timber harvest (within 30-45 days).
• To control erosion, seed must be able to germinate and grow. Disking, sub-soiling or dragging brush or a chain across the area to be seeded may be necessary to ensure good contact between the seed and soil.	
• Seed broadcast in dry summer months and fall can be helped with an application of mulch.	

WILDLAND FIRE	
VDOF BMP Category - Prescribed Burning	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Site preparation burns on steep slopes or highly erodible soils should be conducted only when they are absolutely necessary and should be of low intensity	• FAPH shall implement this BMP as described
• Firebreaks should have water control structures to minimize erosion. Locate firelines on contours as much as possible. Water bars should be constructed in firelines at frequent intervals to slow surface runoff in areas subject to accelerated erosion (e.g., steep grades, highly erodible sloping firelines)	• Firebreaks will be constructed to minimize erosion and will be re-vegetated within 30-45 days after completion of the prescribed burn.
• Site preparation burns create the potential for soil movement. All efforts should be made to keep high intensity site prep burns out of SMZs	• Where high intensity fire behavior is expected during burns in the maneuver training areas, ignition methods that minimize fire intensity shall be implemented along and/or near wetlands and streams occurring within the burn block.
• Use hand tools when it is necessary to connect firelines into stream channels	• Handtools and/or backpack leaf blowers shall be used to connect firebreaks into streams and/or wetlands

DRAFT

VDOF BMP Category - Prescribed Burning (con't.)	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Avoid burning when conditions will cause a fire to burn too hot and expose mineral soil to erosion.	• FAPH implements prescribed burn according to site prescription parameter specifically to avoid the incident of high intensity burns. FAPH also completes a deliberate risk assessment prior to all burns. Corrective actions shall be implemented following a prescribed burn if fire-exposed soils result in erosion to waterways.
• Avoid allowing high intensity fire into SMZs	• Where high intensity fire behavior is expected during burns in the maneuver training areas, ignition methods that minimize fire intensity shall be implemented along and/or near wetlands and streams occurring within the burn block.
• Avoid burning on severely eroded forest soils when the average duff layer is less than one inch thick	• FAPH shall implement this BMP as described. Water quality personnel to identify areas of severely eroded forest soils within respective NRSA comments.
VDOF BMP Category – Fireline Construction	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Firelines should be constructed along the perimeter of the burn area and, when prescribed, along the boundary of a SMZ. The purpose of protecting the SMZ from fire is to safeguard the filtering effects of the leaf litter and organic material. If a fireline along the SMZ boundary is not prescribed, allowance should be made for a low intensity backing fire within the SMZ.	• Plowlines will be located outside of all RPAs unless directly associated with wildfire response (i.e., suppression and/or containment), in which case remediation will be required to ensure soil stabilization. • Low to moderate intensity fires shall be allowed to burn through riparian areas provided the burn stays within the prescribed burn parameters (i.e., prescription). • Where high intensity fires are expected in the maneuver training areas, ignition methods that minimize fire intensity shall be implemented along and/or near wetlands and streams occurring within the burn block.

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VDOF BMP Category – Fireline Construction (con't.)	
VDOF Forestry BMP Specification	**FAPH Implementation Description**
• Firelines should follow the guidelines established for skid trails with respect to water bars and wing ditches and should only be as wide and as deep as necessary to permit safe prescribed burns	• Firebreaks shall be installed to minimize exposed soils and risk of soil erosion while ensuring an effective firebreak.
• Firelines that approach a drainage should be turned parallel to the stream or include the construction of a wing ditch or other structure that divert concentrated runoff into the woods prior to entry into a stream channel	• Plowlines will be located outside of all RPAs unless directly associated with wildfire response (i.e., suppression and/or containment), in which case remediation will be required to ensure soil stabilization • Where high intensity fires are expected in the maneuver training areas, ignition methods that minimize fire intensity shall be implemented along and/or near wetlands and streams occurring within the burn block.
• Firelines on highly-erodible sites should be inspected periodically to correct any developing erosion problems before they become too serious.	• Outside the impact area and duded impact area buffer, corrective actions (i.e., soil stabilization) shall be implemented where erosion with sediment transport into waterways has been observed or is expected.
• Avoid disturbing existing gullies where possible	• Disturbance to gullies will be avoided where possible
• Avoid disturbing any more soil than necessary	• Firebreaks shall be installed to minimize exposed soils and risk of soil erosion while ensuring an effective firebreak.
• Avoid plowing straight up and down a slope, where possible	
• Re-vegetate bare soil areas with slopes greater than 5%, where practical	• Once a prescribed burn has been completed, firebreaks will be stabilized within 30-45 days.

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7.7.4.7.2 CULTURAL RESOURCES

As per the requirements and procedures outlined in the FAPH Integrated Cultural Resources Management Plan (ICRMP), cultural resource surveys are completed for each proposed forest management action. The site is surveyed by means of walk-through, pit testing, or desktop review based on the proposed action. Management action site layout changes or special precautions may be implemented in order to avoid impacts to identified resources whether potentially eligible or not. Completion of cultural surveys is recorded through the NRSA process including an executive summary report of the site survey with findings and the SHPO concurrence letter for action implementation. Survey reports are submitted to the SHPO bi-annually for review and concurrence. Forest management actions are not implemented prior to receiving SHPO concurrence.

7.7.4.7.3 ENDANGERD SPECIES

FAPH harbors nine species listed as federally and / or TES and / or are a DOD SAR (see Chapter 9 of this INRMP). Extensive field surveys of proposed management actions are conducted to ensure that forest management activities do not negatively impact any TES species. Findings from surveys are documented within the NRSA form and maps referencing any identified species locations are attached to the final NRSA. Harvest and/or prescribed burn activities are adjusted to ensure that impacts are mitigated, through avoidance or selectively applied through direct coordination with TES personnel (e.g., prescribed fire disturbance or single tree selection type activities). TES personnel will communicate proper stand-off distances (TES buffers) as required by applicable federal, state, laws, regulations, directives, and guidance.

7.7.4.7.4 OTHER PROTECTED SITES

Each forest management area is surveyed for unique features that may benefit from exclusion of any proposed forest management activity. Any unique features discovered by field foresters or other program area surveyors are documented in the NRSA and excluded from the proposed action, or the action is modified, as appropriate. These sites may include any number of unique features including training resources, landform, forest structure, species composition, vegetation associations, or unique individual tree specimens. Description and justification for the exclusion of unique features will be documented in the NRSA.

7.7.5 FOREST PROTECTION

7.7.5.1 FOREST HEALTH

Multiple threats to the forest exist that may impact the overall health and functionality of the forest ecosystem, the sustainability of the training resource, and the productive capacity of the timber resource. Threats include, but are not limited to insects, disease, severe weather, wildland fire, and mechanical damage during training or land management activities. Active forest

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management reduces stocking levels and increases the vigor and vitality of forest stands, which can improve resistance to insect and disease outbreaks. Logger and trainer awareness can preclude mechanical damage and soil compaction on sites. Any practice that improves forest health and vitality should be implemented as a BMP to ensure forest health sustainability. Additionally, threats such as insects and disease can be detected by casual observation while conducting field activities or through formal inventory and documentation. The CFM and FRI inventories both employ data fields specific to damage/disease observations for potential damage source and percent damage to the stem.

Climate change is expected to grow in importance as its impacts become more apparent regarding average temperatures and amount and timing of annual precipitation. Currently there is a high level of uncertainty about the potential impacts of climate change on the forest resource as outcomes and resulting climate patterns are unpredictable. It is likely that climate change will impact species distributions, biodiversity, and vegetative associations in the region. Additionally, climate change has the potential to impact forest health including more severe or more frequent outbreaks of forest pests and disease, or the introduction of new pest populations. Maintaining awareness of forest health conditions and regional trends will be imperative in identifying threats to FAPH forest resources. CFM and FRI surveys and general observation during routine field activities will be FAPHs primary detection methodology. Any outbreaks or concerns will be further evaluated and may include expert consult for needed treatments. Maintaining forest health and species and structural biodiversity are key in mitigating potential climate change impacts.

7.7.5.2 INSECT, DISEASE, AND OTHER FOREST PESTS

Natural and introduced insects and diseases periodically threaten the health of forest stands. FAPH does not have a dedicated forest health monitor position; instead it is a shared responsibility of all forestry personnel to maintain awareness of the condition of the forests in which they are working. Several insects and other pests are common to FAPH and the region and can be identified by those within the program. Forest pests include southern pine bark beetle (*Dendroctonus frontalis*), ips bark beetle (*Ips* spp.), gypsy moth (*Lymantria dispar*), emerald ash borer (*Agrilus planipennis*), forest and eastern tent caterpillars (*Malacosoma* spp.), fall canker worm (*Alsophila pometaria*) a.k.a, inchworms, and other bark beetles and defoliators. Southern pine beetle outbreaks have occurred and been managed within the last several decades. Recent impacts from tent caterpillars and fall canker worm have resulted in extensive swaths of defoliation particularly in oak. This defoliation activity has been documented at on the installation and regionally (Figure 7-8 and Figure 7-9), and FAPH has cooperated with VDOF in monitoring efforts. Additionally, FAPH served as a host site for USDA placement of emerald ash borer traps throughout the installation in 2012.

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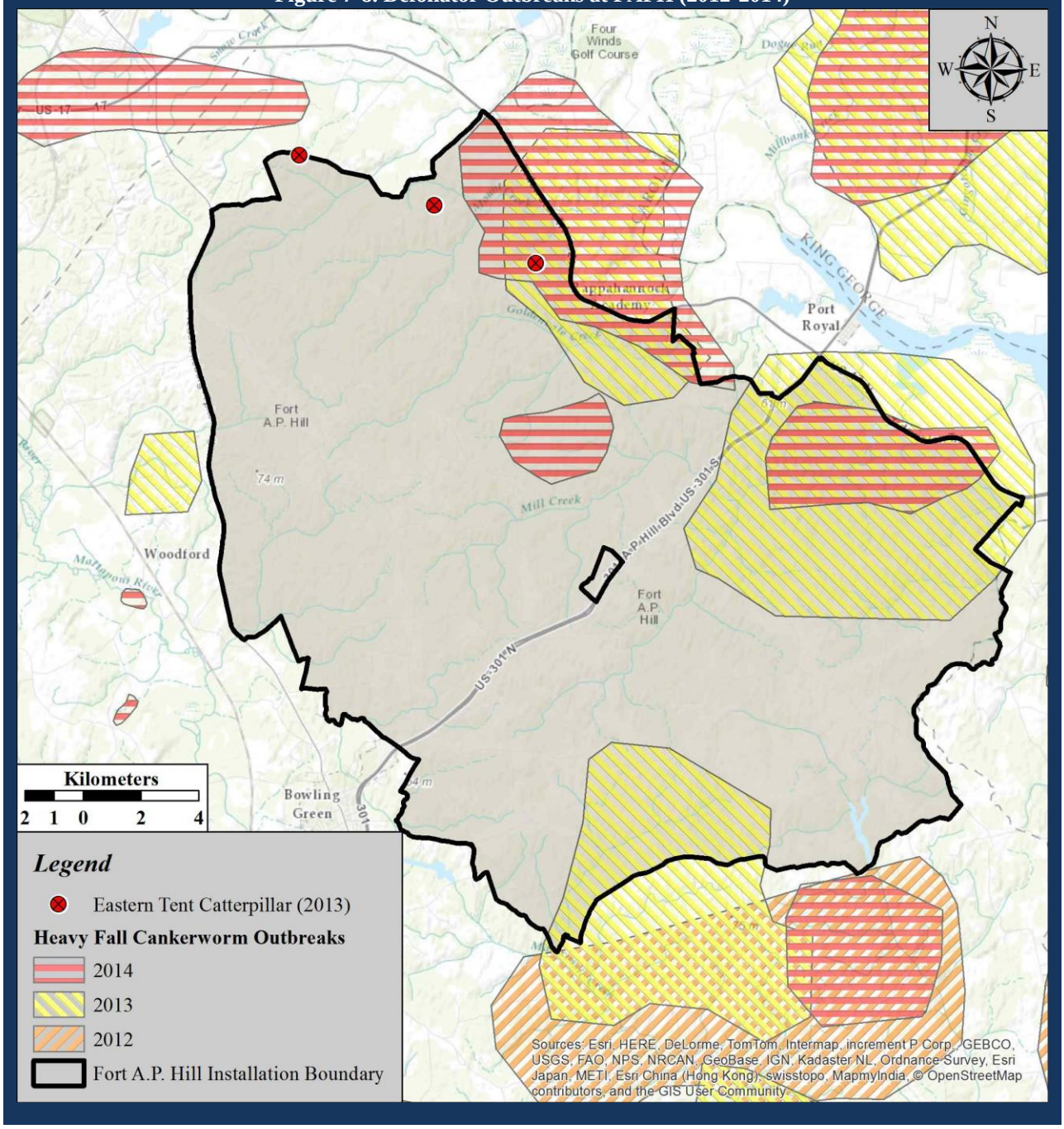
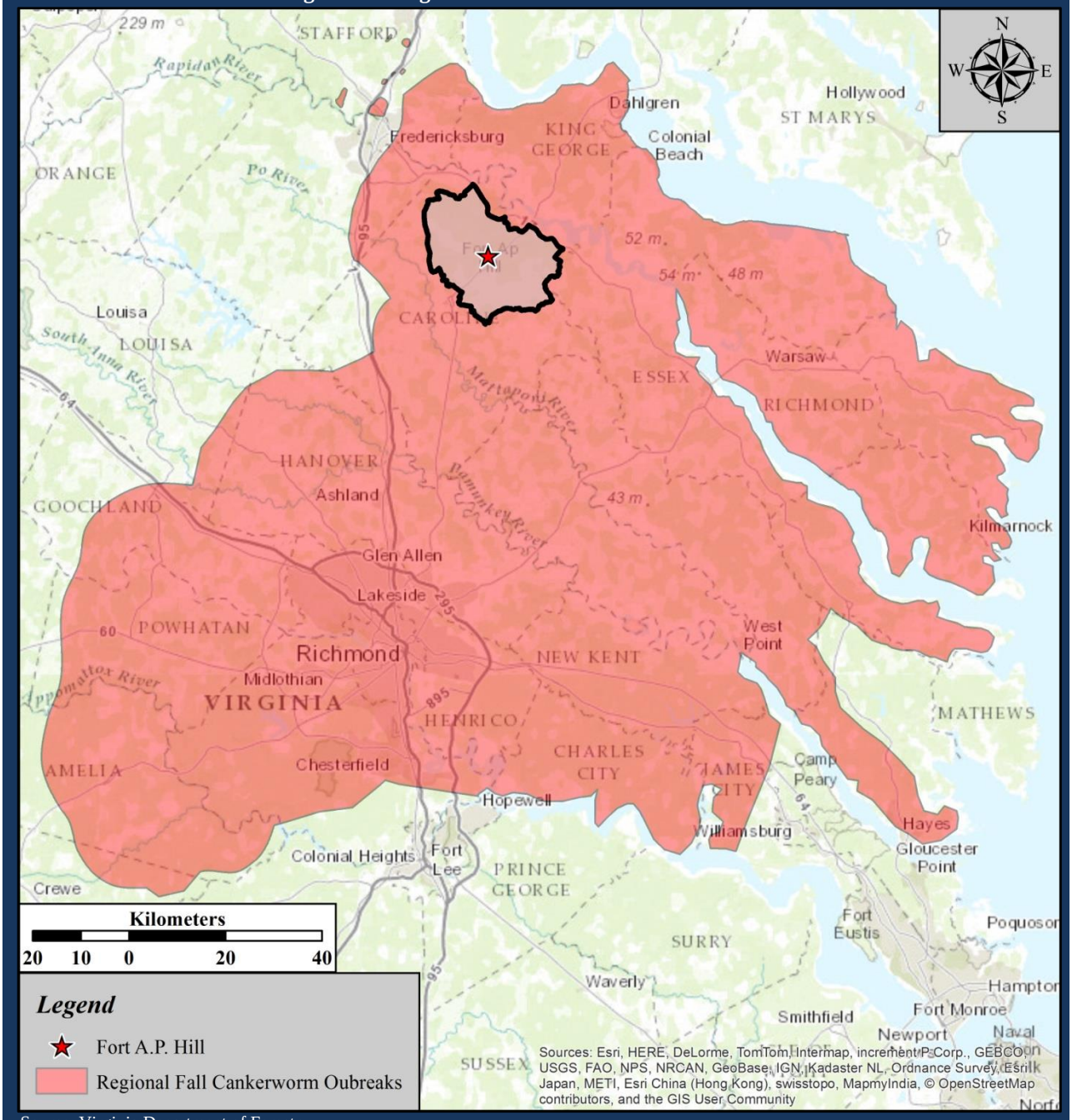
Figure 7-8. Defoliator Outbreaks at FAPH (2012-2014)



Known forest diseases include black knot of cherry (*Apiosporina morbosa*), hypoxylon canker of oak (*Hypoxylon atropunctatum*), Armillaria root disease (*Armillaria mellea*), and various non-specified cankers, foliage diseases, diebacks, conks, and fungi. Though present, these diseases do not have a significant impact on the forest resource.

Figure 7-9. Regional Defoliator Outbreaks 2013-2014



Source: Virginia Department of Forestry

Selective cuttings of susceptible trees, periodic thinning to maintain stand vigor, managing for diverse forest stands, and timely salvage removals following storm or fire damage are the principal management tools used to prevent outbreaks of insects and diseases. Direct control measures are sometimes needed for the southern pine bark beetle and gypsy moth. The southern

pine beetle attacks loblolly and Virginia pines and has the potential to cause substantial timber losses if it reaches epidemic levels. When a southern pine beetle epidemic is identified, the infected trees plus a buffer of up to 100 feet into the surrounding healthy trees are cut to assure the core of the attack has been removed. The gypsy moth preferred food source includes oaks and aspen (*Populus* spp.), and in the event of a large-scale infestation they are a potential threat to the oak populations on the installation. Aerial surveillance or traps may be used to monitor for gypsy moth. The most frequently used direct controls for gypsy moth are *Bacillus thuringiensis* (Bt), a spore forming bacterium, and Dimilin (diflurobenzamide), an insect growth regulator.

7.7.5.3 NON-NATIVE INVASIVE VEGETATION

Non-native, invasive species. Forest management activities, such as timber harvesting create opportunity for the introduction and spread of invasive plants. Exposed, disturbed, soil and open canopies provide ideal conditions for opportunistic invasive species that may already occur in the area or may be transported to the site by logging, military training, or "natural" seed distribution. Once these plants become established they begin to impact the forest stand structure and ecosystem by limiting the resources available to native tree seedlings, shrubs, and herbaceous species. This impact to forest regeneration capacity and ecosystem richness may create long-term impacts to forest health, sustainability, and therefore training capacity.

The Forestry program implements invasive species management (see Chapter 10 of this INRMP) when managing the forest resources when practicable. Forestry Branch staff shall be educated on invasive species occurring in the area so they can document occurrences that they come across while performing field work. These occurrences and any survey results shall be documented in the NRSA and communicated to peers conducting invasive species management. Results and reports generated from the recurring invasive plant surveys implemented by Forestry Branch personnel will also be provided to peers conducting invasive species.

7.7.6 WILDLAND FIRE MANAGEMENT

Wildland fires occur as a matter of routine on most DOD lands, including FAPH, where live-fire weapons training or training exercises using pyrotechnics frequently occur. Consequently, prescribed burning and wildfire suppression are two activities that occur routinely on FAPH for land management and resource protection purposes. Wildland fire, has significant impacts on ecosystem functions, wildlife habitat, forest growth and health conditions, species composition, and the training environment. The impacts can be beneficial or detrimental depending on the severity, location, and extent of the fire. Wildland fire refers to both unintentional wildfires and prescribed (controlled) burns, both of which occur on and are applied to the installation landscape.

Wildland fire operations are conducted jointly with personnel from DPW-ENRD Forestry Branch, DPW Roads and Grounds, DES Fire Department, and DPTMS Range Control and Emergency Management personnel. Coordination of efforts in the application of fire as a land

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management tool and the control of fire unintentionally ignited on the installation is required to ensure safety, efficiency, and resource protection. This coordinated approach is described in detail within the Integrated Wildland Fire Management Plan (IWFMP) (Appendix E). The IWFMP presents the actions that will assist in the mitigation of interruptions to training operation caused by fire and that integrate wildland fire management within FAPH's natural resource management.

FAPH implements a wildland fire program that maximizes the use of prescribed fire to manage vegetation, to manage fuel loading and wildfire risk, and to contribute to ecosystem biodiversity through fire disturbance. The program also provides for rapid wildfire response and control with consideration given to installation and natural resource protection. Continuing a strong wildland fire program at the installation is imperative to reducing risk and managing vegetation and other natural resources to meet mission requirements and desired future condition of the landscape.

In accordance with the IWFMP, the Forestry Branch develops the IWFMP, manages the prescribed burn program, maintains installation weather stations and reports daily Fire Danger Ratings, coordinates resource utilization among DPW, DES, and DPTMS for program implementation and plans, coordinates, implements, and monitors wildland fire training requirement for non-DES personnel. DES Fire Department provides primary response to wildfire events, coordinates directly with Forestry Branch wildland fire personnel during response, and utilizes DPW personnel and equipment upon request. On events, where appropriate, a unified command will be established between Fire Department and Forestry personnel to best manage an event with given resources and knowledge sets. The IWFMP provides additional details on wildland fire procedures and protocols including personnel qualification requirements for fireline duties.

The Forestry Branch plans and implements prescribed burns within silvicultural systems to manage DFC and to control fuel loading, risks of wildfire, and threats to forest resources. Burn sites are planned an prioritized based on stated objectives including Range Complex fuel reduction, maneuver training area fuel reduction, wildlife habitat management, oak regeneration, post-harvest site improvement, and vegetation control. A prescribed burn plan is prepared for each site to document burn objectives, required weather parameters, desired fire intensity, required resources, smoke management considerations, and contingency plan. The five-year prescribed burn plan developed to meet the stated objectives is included in this INRMP (Appendix F) and covered by the INRMP EA. For planning purposes, fall burn season runs 15 October through 15 December and spring burn season runs 15 February through 15 April. Prescribed burning may occur outside these times based upon objectives, fuel loading, and coordination/consultation with the USFWS regarding potential impacts to listed bats and migratory bird species.

The intensity of an uncontrolled wildfire can create significant damage in the forest setting. The trees in young, regenerating forest stands can be completely consumed, mature forest canopies can be destroyed, and the litter layer may be consumed leading to exposed soil and erosion

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concerns. Protected species and other natural resources may also be threatened by an uncontrolled wildfire. As a result, with the exception of the Range Complex, wildfires occurring in a forested condition will be directly controlled to minimize damage to the forest and installation resources. Fires occurring within the Range Complex will be controlled indirectly from established, cleared trails and roads.

7.8 FOREST MANAGEMENT ACTIVITY PROGRESS TRACKING AND REPORTING

As described extensively in this chapter, timber harvests, prescribed burning, and TSI activities require multiple actions for preparation, NRSA review, implementation, and AAR. In order to ensure that each task is completed and appropriately addressed, the Forestry Branch utilizes multiple tracking processes for clarity, transparency, and communication purposes. There are also multiple reporting requirements for INRMP goal and objective tracking annual reporting. This section of the Plan will list and describe Forestry Branch's tracking and reporting processes and mechanisms.

Progress tracking mechanisms are updated as activities are completed and include:

a. NRSA Tracking Log – a Microsoft Excel spreadsheet specifically used to track the completion of NRSA reviews per program area, for timber harvests specifically. This provides a quick summary of progress and due-outs to the other ENRD reviewers. This is typically provided in hard-copy format at coordination meetings or electronically via email.

b. Forestry Field Activities Schedule – this spreadsheet depicts areas scheduled within RFMSS for implementing forestry field activities, including timber site preparation, logging, and inventories. This spreadsheet is updated routinely, distributed to forestry personnel on a weekly basis, and posted to a shared Microsoft Outlook calendar so areas can be appropriately utilized, occupied and/or canceled in accordance with Range Operations policy and protocol (FAPH Reg 350-1).

c. Harvest Status Tracking Personal Geodatabase – this geodatabase is stored in the Forestry Branch shared files. Its purpose is to communicate the progress of field work for the timber harvest blocks. This incorporates location of GPS data for boundaries, skid trails, log decks, resources to protect, and other features and identifies field observations and peculiarities in marking procedures for inclusion in NRSA and pre-harvest plan maps.

d. Timber Harvest Reports – a series of Microsoft Excel spreadsheets that contain information on timber disposal income, volume removal, and logger contract tracking. This information is tracked per FY and reported in both monthly format and as summarized tables per contract and per FY. A GIS dataset is also maintained to track harvest locations and related contract details.

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e. After Action Review Tracking – a Microsoft Excel spreadsheet stored on the shared drive used to track timber harvest block completion dates, AAR inventory completion, and final report completion. AAR reports are reviewed and signed by Forestry program manager(s) and archived with the completed NRSA.

f. Prescribed Burn Implementation and Results – documents in spreadsheet and geographic format areas that received a prescribed burn or where a wildfire occurred. Each day within the designated prescribed burn season are also tracked to document whether a burn was implemented or the reason why no burn was implemented (e.g., weather, personnel availability, etc.).

g. Forest Inventory Progress Tracking – for each FY, a spreadsheet outlining areas to be inventoried, relative priority, location, and completion status is maintained within the Forestry shared file directory to track inventory progress and site scheduling requirements.

h. GIS Databases – GIS spatial tracking of planned and completed forest management activities and related attributed information is updated at least quarterly for archiving, planning, and communication.

Forestry activity reports require continual data tracking and updating for completed activities and supporting actions. Queries derived from the above tracking systems, GIS data queries, forest inventory data queries, and personnel timesheets are some of the data that are factored into the development of these reports. Forestry activity reporting is conducted as needed and includes the following:

a. USAEC End-of-Year Report – provided once annually at the end of the calendar year. This report summarizes the harvest, prescribed burning, and supporting activities, such as firebreak installation length, that the Forestry staff has completed during a given FY. This report is submitted through AERO RPTS web system.

b. USAEC DOA – provided once annually before the end of May. The DOA reports the harvest acreage and timber volumes associated with an upcoming FY work plan. This is used by USAEC to help determine anticipated timber sale income and required USACE support.

c. USAEC Annual Work Plan – provided once annually before the end of May. This reports the estimated acreage of the various forest management activities, miles of trails and firebreaks, as well as salaries for personnel, service contract costs, and funding for supplies. This is used by USAEC to help determine program funding requirements.

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d. CLS – Forestry activities tracked within the CLS system need further definition and clarification due to reimbursable funding support. Non-reimbursable activities should be tracked and reported for CLS-driven funding.

e. INRMP – Quarterly updates reflect the progress of planned versus completed projects related to INRMP goals, objectives, and other designated activities or projects.

7.9 SUMMARY AND PROJECT DESCRIPTIONS

Forestry Branch meets training and ecosystem management objectives by planning a series of forest management actions that are implemented over five year increments. Management actions include commercial timber harvesting, pre-commercial timber stand improvement activities, and prescribed burn actions.

Areas are selected for commercial timber harvesting by applying the following prioritization parameters:

a. Timber stands occurring within the maneuver lanes that do not currently meet the desired 30-50ft tree (tree cluster) spacing with herbaceous understory

b. Planned harvests from the previous five-year plan that were not yet harvested

c. Pine plantation thinning in stands 20+ years in age

d. Silvicultural timed regeneration release, i.e., overstory removal

e. Severely overstocked (150+ ft. BA) stands

f. Hardwood stands identified for oak release harvest

g. Stands characterized by over-mature, senescing Virginia pine

The maximum timber harvest acreage planned per year within the five-year plan is 1,500 acres. This acreage is planned not only to stay within annual allowable harvest guidelines while allowing flexibility in final site selection, but also as a proven maximum capacity for current in-house resources dedicated to timber site preparation and required cultural and listed species surveys. Additionally, annual timber harvest acres average closer to 750 acres per year as a functional maximum which allows flexibility in planning, timber harvest site selection, and scheduling.

Commercial timber harvesting requirements outside the scope of the planned five-year site occur routinely as a function of site clearing for construction projects or unanticipated mission and/or

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training requirements. Once Forestry Branch is informed of tree clearing requirements, an on-site evaluation will take place to determine the merchantability of the trees based on both quality and quantity. It will be determined if there is adequate timber product available to sell the site to a logger, either through a new bid and contract award or as an add-on to an existing timber harvest contract. If there is not enough value to initiate a sale or interest on-site loggers, a second determination will be made whether to forego capture of the market value or to pursue compensation by the construction contractor for the value of the timber to be removed. A contractor may not sell timber removed from a construction site unless the government has first been compensated for the value of that timber. Such compensation is deposited in the Authorized Reimbursable Account.

When there is enough standing timber to justify a sale, the limits of clearing must first be marked by the construction contractor/surveyor per the specifications of the site plan. Forestry Branch is not responsible for delineating the limits of clearing on a construction site requiring commercial removal of the timber. Additionally, NEPA documentation and survey coordination will be initiated by the project proponent in coordination with ENRD.

TSI activities focus on pre-commercial thinning of pine stands to enhance growth and vigor in regenerating pine stands, crop tree release in regenerating hardwood stands, and mid-story release actions in oak management site. The objectives for these actions are two-fold: they increase the residual spacing, which enhances training access and increases the growth rate and survivability of designated commercial growing stock, effectively reducing rotation age and increasing timber quality and value of desired species. Understory treatments (refer to Section 7.7.5) are also applied to reduce stand density, increase growing space, and improve growing conditions for desired timber species, such as oak. A variety of mid-story treatments are available, including hand-felling and chemical treatment of undesired competing stems.

Pine stands that are available for commercial harvest receive a pre-commercial thinning within five to ten years of receiving a regeneration harvest (e.g., seed tree, shelterwood, or clearcut). This action may be implemented with the use of mechanized equipment such as mulching machine or masticator. Hardwood stands are evaluated for crop tree release within the same timeframe of receiving a shelterwood harvest. Crop trees are selected based on desired spacing, desired species, predicted survivability, and desired growth form. Mid-story treatment sites are selected in oak management units.

Prescribed burning is applied to the landscape to meet a variety of land management objectives, primarily hazardous fuel reduction in the range complex and vegetation management. Additional objectives include oak species management at designated sites, post-harvest debris reduction, and wildlife conservation area management for desired grasses, forbs, and cover structure. Ideally, the range complex is burned annually to reduce available wildland fuels and increase the effectiveness of established firebreaks in areas that are highly likely to ignite during live-fire training. Other areas are either burned as a one-time event or on a recurring interval (e.g., two to five years) to meet stated site objectives or to attain DFCs.

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Table 7-9. Forest Management-Specific INRMP Projects FY16-20			
FY	**Project Name**	**Project Description**	**Funding Class +**
Annual 16-20	Forest Resource Inventory (FRI)	Conduct forest inventory on at least 5,000 acres for incremental (10% per year) forest inventory update.	0
Annual 16-20	Invasive Species Monitoring	Implement recurring invasive species survey on established plots that have received a management action that may impact the condition or extent of invasive species.	3
Annual 16-20	Data development and geodatabase management	Continual forest data processing from inventory efforts and GIS data collection. Includes labor and equipment related to correcting, processing and formatting of data for updating geodatabase and general database administration.	0
Annual 16-20	Timber sale preparation and administration	Includes supplies and labor related to tasks required to prepare, sell, and administer annual timber harvest sites and timber sale contracts.	0
Annual 16-20	Site rehabilitation	Includes supplies, equipment and labor required to conduct site rehabilitation including disking, leveling, and/or seeding of harvest sites	1
Annual 16-20	Timber stand improvement	Includes supplies, equipment and labor required to prepare and implement planned TSI treatments. Any work requirements that exceed in-house resourcing capabilities may require service contract development, funding and administration.	3
Annual 16-20	Prescribed burn planning and implementation	Includes supplies, equipment, and labor related to tasks required to prepare and execute the annual prescribed burn plan.	0
Annual 16-20	RAWS Maintenance and Reporting	Includes supplies, equipment, and labor related to maintaining, servicing, and reporting requirements related to National Fire Danger Rating System weather stations per established standards.	0
Annual 16-20	Wildland fire training	Implement on-site and provide for off-site wildland fire training, to meet National Wildfire Coordinating Group (NWCG) position qualification standards.	0
Annual 16-20	Forestry Planning	Includes labor and supplies required to assess forest conditions, evaluate and update forest DFCs to align with updated FMUs, establish iterative five-year management plan, establish annual work plans for all forestry actions including timber harvesting, prescribed burning, TSI actions, GIS analysis and mapping requirements, and all activity reporting requirements and DFC monitoring efforts.	0

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Table 7-9. Forest Management-Specific INRMP Projects FY16-20			
FY	**Project Name**	**Project Description**	**Funding Class +**
Annual 16-20	Forestry Actions Administration	Includes labor and supplies required to: Track and report forestry project implementation status; Develop, distribute, track, and finalize all NRSA survey documents required for forestry actions; Schedule, track and adjust all forestry field activities within RFMSS and coordinate with Range Control as needed to implement and mitigate conflicts; Budget management and execution; Equipment maintenance and inventory efforts.	0
16	Capital Investment (*Fireplow Transport Truck Replacement*)	Life-cycle replacement of aging transport truck	0
16	Capital Investment (*Fireplow Replacement*)	Life-cycle replacement of aging fireplow	0
17	Continuous Forest Monitoring	Implement CFM data collection on established permanent plots.	0
17	IWFMP Update	Complete five-year update requirements on the FAPH IWFMP.	0
17	Capital Investment (*Wildland Fire UTV w/Skid*)	Expand holding capacity for prescribed burn program by purchasing, equipping, and utilizing one new UTV with skid unit.	0
+ Prioritization based upon U.S. Army Guidance			

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8.0 FISH AND WILDLIFE RESOURCES MANAGEMENT

8.1 INTRODUCTION

FAPH supports a wide variety of fish and wildlife species due to the diversity of habitats that can be found on the installation. Many forest interior breeding birds, including neotropical migrants, are present due to the broad variety and amount of forested habitat. Diverse wetlands on the installation provide ideal habitat for a variety of amphibians, which are of concern because of declining populations worldwide. Various inventories have confirmed the occurrence of more than 40 mammals, 145 birds, 40 fish, 60 reptile and amphibian species, and numerous invertebrate species on the installation (Appendix C).

Table 8-1. Laws, Regulations, Directives, and Guidance applicable to Fish & Wildlife Management
Federal
The Sikes Act, *as amended* (16 U.S.C. Sec. 670 et seq. / 32 C.F.R 190)
The Migratory Bird Treaty Act (16 USC Sec. 703 / 50 CFR 10, 20-21)
The Bald and Golden Eagle Protection Act, *as amended* (16 U.S.C. Sec 668a-668c / 50 CFR 22)
The National Environmental Policy Act (43 U.S.C. Sec. 4321 et seq. / 40 CFR 1500)
The Lacey Act *as amended* (16 U.S.C. Sec. 3371 et seq. / 50 CFR 16)
The Engle Act (10 U.S.C. Sec. 2671 et seq.)
The Animal Damage Control Act (7 U.S.C. Sec. 426)
The Anadromous Fish Conservation Act (16 U.S.C. Sec. 757)
Executive Order 12962 – *Recreational Fisheries as amended* (60 Fed. Reg. 30769)
Executive Order 13112 – *Invasive Species* (64 Fed. Reg. 6183)
Executive Order 13186 - *Responsibilities of Federal Agencies To Protect Migratory Birds* (66 Fed. Reg. 3853)
Executive Order 13443 – *Facilitation of Hunting Heritage and Wildlife Conservation* (72 Fed. Reg. 46537)
Executive Order 13508 – *Chesapeake Bay Protection and Restoration* (74 Fed. Reg. 23099)
Executive Order 13575 – *Establishment of the White House Rural Council* (79 Fed. Reg. 34841)
National Bald Eagle Management Guidelines
DOD-USFWS-IAFWA Memorandum of Understanding – *Cooperative Integrated Natural Resource Management Program on Military Installations*
DOD-USDA MOU – *Food, Agriculture, Pest Management, Nutrition, Related Homeland Security Requirements, and Other Research of Mutual Interest*
Federal Interagency MOU – *Partners in Reptile and Amphibian Conservation Steering Committee*
DOD-USFWS MOU – *To Promote the Conservation of Migratory Birds*
National Strategy to Promote the Health of Honey Bees and Other Pollinators (19 May 2015)

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Federal (con't.)
Presidential Memorandum – *Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators* (20 June 2014)
DOD
DOD Instruction 4715.03 – *Natural Resources Conservation Program*
DOD Instruction 1015.10 – *Military Morale, Welfare, and Recreation (MWR) Programs*
DOD Instruction 5525.17 - *Conservation Law Enforcement Program (CLEP)*
DOD Instruction 5525.15 – *Law Enforcement Standards and Training in the DOD*
DOD-Bat Conservation International MOU – *To Promote Bat Conservation* (extended 2011)
Strategic Plan for Amphibian and Reptile Conservation and Management on DOD Lands
DOD Memorandum – DOD policy to Use Pollinator Friendly Management Prescriptions (5 September 2014)
DOD – Pollinator Partnership MOU - To Promote the Conservation and Management of Pollinators
U.S. Army
Army Regulation 190-45 – *Law Enforcement Reporting*
Army Regulation 200-1 – *Environmental Quality: Environmental Protection and Enhancement*
Army Regulation 215 – 1 *Military Morale, Welfare, and Recreation Programs and Non-appropriated Fund Instrumentalities*
FAPH
ICRMP (Appendix D)
Integrated Pest Management Plan (Appendix J)
FAPH Regulation 200-1 – Environmental Requirements
FAPH Fish Stocking SOP
FAPH Regulation 200-10 - Hunting, Fishing and Trapping (Appendix G)
Commonwealth of Virginia
State Wildlife Action Plan
VDGIF Hunting, Fishing, and Trapping Regulations (§§ VA. CODE ANN. 29.1 – 100 to -612)
Commonwealth of Virginia (con't.)
Management of Bald Eagle Nests, Concentration Areas, and Communal Roosts in Virginia: *A Guide For Landowners* 2012
Fisheries and Habitat of the Tidal Waters (§§ VA. CODE ANN. 28.2-100 to -1514)
Virginia Fertilizer Law (§§ VA. CODE ANN. 3.2-3600 to -3625)

8.2 ROLES & RESPONSIBILITIES

The FAPH Garrison Commander is responsible for ensuring that i) all proceeds from the hunting, fishing, and trapping licenses / permits are deposited into the Army Fish and Wildlife

Conservation Fund (21X5095), ii) Army law enforcement personnel are trained in conservation law enforcement, where appropriate, and iii) sufficient numbers of professionally trained natural resource management personnel and natural resources law enforcement personnel are available and assigned the responsibility to perform tasks necessary to comply with the Sikes Act and other natural and cultural resources laws and regulations.

The DPW-ENRD is responsible for the enhancement and preservation of native wildlife species through the implementation of this INRMP.

The DPW-ENRD is responsible for planning and management (e.g., surveys, monitoring) for all fish and wildlife resources to include the administration and implementation of the hunting, fishing, and trapping programs.

The DES is responsible for i) implementing the Conservation Law Enforcement Program, ii) ensuring that all applicable natural and cultural resource laws and regulations are enforced on FAPH, and iii) tracking violations of conservation laws.

The DFMWR is responsible for coordinating with the DPW-ENRD (Fish & Wildlife) for all natural resources-related recreational activities (e.g., fishing tournaments).

8.3 MANAGEMENT GOALS & OBJECTIVES

FAPH proactively manages its fish and wildlife resources in accordance with all applicable laws, regulations, directives, and guidance. FAPH's Fish & Wildlife (F&W) Management Program is a critical element of this INRMP that meets several goals and objectives (Table 8-2).

Table 8-2. FAPH INRMP Goals and Objectives (in bold) accomplished through the Fish & Wildlife Management Program

Goal	Objective(s)	Performance Measure(s)
1.0 Sustainably manage the Army's natural resources to support Mission requirements	**1.1 Coordinate with military land users to identify Mission requirements**	**(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)**
	1.2 Sustainably manage habitats to meet doctrinal training requirements	(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned **(3) % of Open Areas in prescription (4) Deer density (per mi^2) (5) WASH Plan (6) Currency of Planning Level Surveys**
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed

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Table 8-2. FAPH INRMP Goals and Objectives (in bold) accomplished through the Fish & Wildlife Management Program		
Goal	**Objective(s)**	**Performance Measure(s)**
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	**2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities**	**(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR (5) Open area condition (6) Annual updates to Hunting and Fishing Regulations**
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	**(1) Outreach events (2) Recreation Safety (3) Public wildlife viewing opportunities**
	2.3 Implement activities that mutually benefit installation natural resources management and the community	**(1) Recreational user Satisfaction (2) Recreational user trends**
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity.	**(1) Population indices (2) Suitable habitat (acres) (3) Sufficient no. of adequately trained CLEOs**
	3.3 Manage invasive species to limit impacts to native habitats	**(1) Treatment / Control (% of occurrence sites) (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials**

8.3 TERRESTRIAL HABITAT MANAGEMENT

The primary objective of terrestrial habitat management on FAPH is to first provide diverse training grounds for soldiers, and secondly manipulating these training grounds to benefit the native wildlife species. FAPH's rolling topography offers a wide variety of terrestrial habitat from rich wetlands to oak-pine ridge tops. Much of the Post was converted from historical farmlands to primarily forested training lands. This diverse habitat offers great opportunities for habitat manipulations that benefit training, as well as native plant and wildlife species.

8.3.1 TERRESTRIAL HABITAT RESOURCES

Terrestrial habitat resources, described in Chapter 4, comprise about 92% of FAPH lands, and forests comprise about 85% (65,000 acres) of the terrestrial habitat. Availability of water, space, escape and resting cover and nutrition affect the suitability of a given habitat to support

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the biological needs of specific wildlife. Habitat resources at FAPH are defined by 2% cantonment (urban) areas and training areas composed of 85% forests, 6% grasslands and approximately 8% wetlands. Garrison forests are generally classified by three forest types: southern yellow pines, mixed hardwoods, and mixed pine-hardwoods. Grasslands include fire-maintained grasslands; native grass, shrub and seedling trees; cultivated pastures and fields; and manicured landscape.

If not managed, succession predictably occurs in abandoned fields and cutover forestland at FAPH. Initially, various annual grasses and forbs dominate. Woody vegetation slowly moves in, to include the introduced autumn olive. Within five years, a forest cover will begin to develop with Virginia pine, loblolly pine (e.g. yellow pines) and sweet gum seedlings dominating in most old-field situations. This most prevalent southern yellow pine will gradually thin itself by natural mortality. Concurrently, oaks, hickories, and poplar will become established with mixed pine-hardwoods and mixed hardwood forests replacing the pines.

A large quantity of species found on FAPH such as the bobwhite quail (*Colinus virginianus*), eastern cottontail (*Sylvilagus floridanus*) and neotropical migratory birds prefer and rely heavily on early stage successional habitat. Early successional habitat provides excellent bedding cover for white-tailed deer (*Odocoileus virginianus*). White-tailed deer are generalist species, but achieve prime physical condition when high quality forage such as agricultural crops and hard and soft mast (acorns, persimmons) are readily available. Management should focus on all of these habitat stages necessary to achieve FAPH's goal for creating a habitat that promotes biodiversity.

Maneuver Training Area and Controlled Access area boundaries represent basic land management units at FAPH. As with any military training land, military exercises, outdoor sporting activities and recreation and other tasks are assigned by these specific areas to ensure the safe and efficient use of lands at FAPH. The Forestry Branch (refer to chapter 7) subdivides the training areas into smaller section known as forest compartments. Forest compartments, comprised of 21 strata, are further delineated into forest stands of similar age, species composition and density. 3,100 individual stands have been delineated at FAPH representing individual management units.

Forest age distribution can significantly affect habitat quality. Nesting cavities are crucial to many species; these cavities can be found in older and mature forests as well as in scattered dead trees (snags). Mature stands also provide mast crops, which are energy sources for several species. Mast crops are invaluable on FAPH to these species due to the lack of agricultural fields. Rotting logs and fallen debris can provide habitat for invertebrates and vertebrates. Several birds including many neotropical species rely on young, high density stands. Many other species also thrive in these habitats such as foxes, rabbits, and the woodcock. The current age distribution on post is dominated by older age classes, reiterating the need for younger age classes.

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8.3.1.1 HABITAT REQUIREMENTS

Wildlife habitat considerations are related to specific seral vegetative stages, placing focus on diversification of the different habitat types and maintaining corridors and connectivity of the specific seral stages. Recommendations for some wildlife species are summarized in Chapter 8. Ecological management will support the Garrison's training mission, environmental guidelines, and promote outdoor recreational activities.

8.3.1.1 HABITAT MANAGEMENT

8.3.1.1.1 FOREST MANAGEMENT

Terrestrial management is inherently invested in the long-term development of the forest community with regard to age distribution of forest stands and interspersion of different forest types. These factors are primary indicators of habitat suitability for wildlife. A wide variety of silvicultural practices are utilized to manage forest resources on FAPH to create the desired interspersion of forest resources. These are determined with a comprehensive analysis of collected data coupled with GIS data, natural and cultural resource considerations, and training mission demands. Forestry activities include management prescriptions for late seral forests, threatened and endangered species needs, cultural resources restrictions, wetlands and water quality and both even-aged and uneven-aged forest systems. Terrestrial habitat will be managed as a contiguous ecosystem fully incorporating the complex interdependencies of the soil, vegetative, and hydrological resources at FAPH.

FAPH implements an integrated Forest Management program built upon ecosystem management principles, to include protective measures to avoid negative impacts to wetlands, threatened and endangered species, wildlife habitat, and other sensitive resources. General wildlife habitat-related forest management considerations include:

a. Maintain, and where necessary, create sustainable forest conditions required to support or facilitate military training activities

b. Maintain ecosystem vitality and overall forest health by applying the concepts of timber stands improvement, forest health monitoring and regeneration processes to silvicultural treatments

c. Manage forest stands to provide structural diversity to include, but not restricted to, downed debris, snags and multiple canopy strata in the forest

d. Optimize natural plant and animal biological diversity within forest stands

e. Integrate wildlife habitat requirements into the decision making process at the forest stand and landscape level

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f. Manage forest and grassland areas for fuel loading and wildfire prevention

g. Apply current standards of environmental awareness and environmental compliance to forestry activities

Specific wildlife habitat-related forest management considerations are incorporated into the prescription and planning of forest resource harvests and include:

a. The creation of irregular harvest boundaries

b. Reduction of forest fragmentation

c. Implementation of wildlife corridors

d. Retention of cavity/den trees

e. Minimization of activities during reproductive cycles

f. Maintenance of the mast producing hardwood forest composition

g. Interspersion of open forest types (i.e., savanna)

h. Create and maintain small (10-20 acre) scattered regeneration cuts that intersperse young forest stands within a mosaic of mature forest stands and woodland openings

i. Use prescribed burning on a 3-5 year rotation to reduce fuel and stimulate herbaceous and woody plant production in the forest understory

j. Management of riparian areas are beneficial in the provision of large cavity trees and tall large raptor nesting trees as well as providing precious vegetative cover for frogs, turtles and small mammals

k. Retain old home sites that occur on FAPH as they have associated vegetation (e.g., daffodils, remnant orchards of pear, apple and black walnut trees) that are beneficial to a variety of wildlife species

l. Manage the forest resource to maximize mast production

i. Mast, an important food source, is the reproductive fruit of trees, shrubs and other woody vegetation. Typically, mast is separated into two categories, hard and soft

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mast. Hard mast includes acorns, hickory nuts, chestnuts, beechnuts, walnuts, pecans and pine nuts. Soft mast includes blackberries, blueberries, persimmons, paw paws, and other soft-bodied seeds. Acorns are an especially important source of hard mast in many forests because of their substantial contribution to the total wildlife food base. Enhancing other mast producers such as hickories, beech and pine ensures there is alternate forage and an adequate food supply from year to year. Therefore, it is important to maintain these diversified forest stands that contain a variety of oak and other hard and soft mast producing trees.

ii. Oak mast surveys have been conducted annually at FAPH. Most oak species begin acorn production at a size greater than 10 inches in diameter (DBH), and increase production with continued growth. The annual mast survey includes several different sites to include upland and lowland terrain. At each site 20 trees over 10 inches are inventoried, 10 each of red oak and white oak species. Results have been variable, as expected by the variability of species specific mast production cycles.

iii. Cavity trees can be snags (dead standing trees), dying trees, or living trees with internal decay. Cavities are used by a number of wildlife for several purposes, to include nests and dens, escape and roosting, and feeding. Although standing dead trees are generally removed in traditional timber harvest programs, some snags should be left where feasible. Priority should be given to living trees with cavities, hardwood cavity trees and trees with low blow down risk.

8.3.1.1.2 NON-FORESTED HABITAT MANAGEMENT

Approximately 5,500 acres of open non-forested habitat occur at FAPH. Less than one-quarter of that acreage is classified as improved grounds in the cantonment areas, which is defined as housing and administrative support, recreation, service and storage, major camps and troop housing and support. The remaining open acreage includes semi-developed grounds that are maintained primarily for military training, airfields and heliports, utility right-of-ways, and wildlife openings. Some of the property experiences frequent burning caused by high explosive munitions, creating and maintaining an open landscape. Semi-developed grounds can provide beneficial wildlife habitat in addition to military training sites, whether incidentally or by specific management. These grounds are maintained in grassland / shrub vegetation by farming leases, mowing regimes and prescribed burning management. Some improved and semi-developed property, such as heliports, picnic areas and rifle ranges provide considerable wildlife forage despite their primary purpose. Native and non-invasive plantings should be utilized in landscape designs whenever possible. Minimal landscaping is implemented and concentrated at appropriate high visibility areas throughout post. Refer to Chapter 13 (Grounds Maintenance), for more in-depth conservation landscaping and maintenance planning.

Permanent openings are managed to provide wildlife requirements. Management goals for permanent openings incorporate planning for diversity and complex vegetative structure

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providing habitat for a variety of animals. Planning and design should include: high-protein forage cover for white-tailed deer; early successional fields of native grasses and forbs to provide food, cover, and brood habitat for small game (quail, dove, rabbits) and wild turkey; and old field/edge habitat preferred by numerous non-game species. In addition, managed openings include multi-purpose clearings that serve as landing zones and support other military training functions as these can also provide great foraging and cover. Complex vegetative structure will include plantings, clumps of woody vegetation, snags, stumps, hollow logs, and brush piles. While snags, stumps, logs, and brush may not be aesthetically pleasing, these characteristics are actively utilized by a myriad of invertebrate and vertebrate species, including insects and subsequent insectivores such as bats, birds, and small mammals.

8.3.1.1.2 .1 OPEN AREAS MANAGEMENT

DPW-ENRD Fish and Wildlife (F&W) currently manages approximately 1,000 acres of open area habitats on a rotational basis with approximately 500 acres maintained annually.

8.3.1.1.2.1.1 CONSERVATION PLANTINGS

Wildlife enhancement plantings currently consist of cool season grains and perennial legumes and are implemented primarily through conventional tilling and seeding in the fall. Warm season grasses and forbs are planted in the spring. Soils are periodically tested to measure condition and determine supplemental pH and fertility requirements for successful planting.

Planting of selected fields is done on a multi-year rotation. Planting in a 2-5 year rotation allows fields to go fallow in a period of rest. This rest period allows highly nutritious forbs to grow, providing foraging habitat and cover vegetation during the following seasons. Most planting at FAPH is conducted in the fall with a mix of cool season grains and perennial legumes. These perennials promote nitrogen fixation in the soil, a process that improves soil fertility for future plantings. Periodically fields will be planted in the spring with warm season grasses and forbs. Larger fields may be divided into sections and planted on different rotations allowing for heterogeneity of types and ages of herbaceous vegetation.

Deer and other wildlife may feed in planted fields and thereby forage less on the surrounding woodland vegetation which could decrease the impact on the forest understory. Plantings are designed to provide high levels of nutrition per acre of forage. Proper design also provides for extended periods of beneficial forage. This increased nutritional content and availability provides for wildlife growth into prime physical condition. For deer, this includes good formation and healthier birth weights. Protein contents of native forages normally drop below maintenance levels of 10-12% crude protein content by mid-July. The planted forage should produce a minimum of 14-17% crude protein. Legumes such as ladino clover provide high protein forage that is also highly digestible and rich in calcium. Calcium is important for bone and antler formation and influences birth weights. Cereal grains (e.g. wheat, rye, barley) provide forage early in the spring and are good sources of phosphorus, which is important in milk production.

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8.3.1.1.2.1.2 VEGETATION MANAGEMENT

DPW-ENRD (F&W) open areas that are not managed by prescribed burning should be mowed after the beginning of July. By waiting until the beginning of July to mow, species are allowed to complete breeding, nesting, and rearing activities. It would be preferred that all mowing would be completed by the middle of August; this will allow new growth before the fall. Military training operations may require mowing to ensure clear sight lanes. When practical, some strips will be left unmowed in larger fields to produce forage, seed and cover for game and non-game animals.

Prescribed burning and wildland fire suppression are prevalent occurrences at FAPH and are conducted jointly with DES Fire Department, DPW Roads and Grounds and the Forestry Branch. The Forestry Branch conducts large-scale prescribed burning on an annual basis for habitat enhancement, silvicultural planning, and to decrease fuel loads. Due to live-fire training activities, the 27,000 acres of forests and open areas near ranges and impact areas within the live-fire range complex south of Route 301 are the most susceptible to wildfire. In addition, forested and open areas throughout FAPH can be subject to wildfires caused by training with pyrotechnics. The Forestry Branch operates under the IWFMP. High fire risk habitats will be burned with planned application of prescribed fire to reduce fuel loads and minimize wildfire occurrence. Frequently burned areas will be connected to create contiguous grassland connectivity for species declining due to fragmentation. The most effective time for prescribed fire is during the late winter and early spring before vegetative greening occurs. Historical wildfire data and expected weather conditions identify the periods from mid-February to the end of April and mid-October through November to provide for ideal wildfire ignition and spread. While military training requirements and fire danger ratings will dictate prescribed fire planning, the majority of burning activity should occur during these windows. In addition to maintaining open areas with fire, burning will be prescribed to enhance habitat quality in forest stands, as well as support open forest training lands.

Specific wildlife management considerations for conducting prescribed burning include:

a. Prescribed burning shall be completed by 15 April to avoid impacts to federally listed bat species and ground-nesting birds unless coordination/consultation with the USFWS has occurred.

b. Warm season grass plantings should be burned every 2-4 years to maintain the habitat

c. Prescribed burning around eagle nests shall be conducted during the fall burn season

d. The use of prescribed fire to create savanna-like habitats would benefit early successional species

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8.3.1.1.2 .2 PLANTATIONS FOR MAST PRODUCTION

Several sawtooth oak plantations were established c.1970 and are still present on the landscape providing extremely nutritional forage. Release of competition can help maintain these plantations.

Creation of new mast producing plantations will provide a benefit to a variety of wildlife species.

8.4 AQUATIC RESOURCES MANAGEMENT

8.4.1 FISHERIES MANAGEMENT

8.4.1.1 FISHERIES RESOURCES

FAPH's surface water resources (Chapters 3 & 12 of this INRMP) support warm water fish communities that are typical of the Coastal Plains region. A total of 42 fish species have been documented at FAPH (Table 8-3; Appendix C). Fifteen impoundments are actively managed to maximize opportunities for recreational fishing. Impoundments range in size up to 70 acres, totaling over 500 acres of fishable waters.

FAPH manages these impoundments to provide a quality and sustainable recreational fishery while supporting military training utilization of the ponds. The primary game species that are managed for recreational fishing include Largemouth bass (*Micropterus salmoides*), Chain pickerel (*Exox niger*), Bluegill (*Lepomis macrochirus*), Channel catfish (*Icalurus punctatus*) and Black crappie (*Pomoxis nigromaculatus).* Since 2003, FAPH has implemented a put-and-take cold weather trout fishing program. Rainbow trout (*Oncorhynchus mykiss*) were stocked to provide an additional recreation opportunity during cold weather months. Due to cold temperature requirements trout cannot live year round in the waters of FAPH and cannot establish a reproducing population. This program is currently not active but is under review for future consideration.

Most of these fish species inhabit the many streams located at FAPH. Management emphasis of non-game fish species focuses on providing sustainable reproducing populations and maintaining existing fish communities at an acceptable level that the aquatic habitat can support.

Table 8-3. Fishes of FAPH

Scientific Name	Common Name
Acantharchus pomotis	Mud sunfish
Alosa aestivalis	Blueback herring
Alosa pseudoharengus	Alewife

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Table 8-3. Fishes of FAPH	
Scientific Name	**Common Name**
Ameiurus natalis	Yellow bullhead
Ameiurus nebulosus	Brown bullhead
Amia Calva	Bowfin
Anguilla rostrata	American eel
Aphredoderus sayanus	Pirate perch
Centrarchus macropterus	Flier
Clinostomus funduloides	Rosyside dace
*Ctenopharyngodon idella**	Grass carp
Cyprinella analostana	Satinfin shiner
Dorosoma cepedianum	Gizzard shad
Enneacanthus gloriosus	Bluespotted sunfish
Enneacanthus obesus	Banded sunfish
Erimyzon oblongus	Creek chubsucker
Esox americanus	Redfin pickerel
Esox niger	Chain pickerel
Etheostoma olmstedi	Tessellated darter
Fundulus diaphanus	Banded killifish
Gambusia holbrooki	Mosquito fish
Hybognaths regius	Eastern silvery minnow
Icalurus punctatus	Channel catfish
Ictalurus furcatus	Blue catfish
Lampetra appendix	American brook lamprey
Lepomis auritus	Redbreast sunfish
Lepomis cyanellus	Green sunfish
Lepomis gibbosus	Pumpkinseed sunfish
Lepomis gulosus	Warmouth
Lepomis macrochirus	Bluegill
Lepomis microlophus	Redear sunfish
Micropterus salmoides	Largemouth bass
Morone ameriana	White perch
Notemigonus crysoleucas	Golden shiner

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Table 8-3. Fishes of FAPH	
Scientific Name	**Common Name**
Noturus gyrinus	Tadpole madtom
Noturus insignis	Margined madtom
Perca flavescens	Yellow perch
Pomoxis nigromaculatus	Black crappie
Rhinichthys atratulus	Blacknose dace
Semotilus atromaculatus	Creek chub
Semotilus corporalis	Fallfish
Umbra pygmaea	Eastern mudminnow
* Sterile population maintained by stocking for aquatic vegetation control	

8.4.1.2 MANAGEMENT PRACTICES

Fisheries management at FAPH is focused on maintaining healthy and balanced game and non-game fish populations that provide a valuable recreation resource to the public. Fisheries management shall be conducted using accepted scientific principles in compliance with applicable laws and regulations. Implementation of sound fisheries management principles will continue to develop and maintain healthy and diverse fisheries populations within the carrying capacity of FAPH's aquatic ecosystem, while continuing to support the military mission and recreational fishing opportunities. Management activities will focus on maintaining and enhancing habitat favorable for supporting naturally reproducing fish communities, and will be accomplished in a manner to conserve, protect, and sustain biological integrity of wild populations. Streams and impoundments are monitored for species composition and size/age distribution, habitat quality, fish health and water quality. Impoundment management may require the stocking/removal/relocation of fish, installation of habitat structures, control of aquatic vegetation, maintaining creel limits that provide for sustainable fisheries.

8.4.1.3 SAMPLING

Sampling includes biological, physical, and human aspects of the aquatic resources of FAPH. Managed waters and habitats are sampled intermittently using electroshocking to provide fish production, fish health, species composition, population size structure as well as habitat availability, quality, and monitoring. Sampling has been accomplished in the past using seines, gill nets, trap nets, and electrofishing (Figure 8-2). Electrofishing is the most commonly used sampling tool at FAPH. Physical habitat assessments are conducted using accepted measurement and estimation practices. Chemical habitat is monitored by measuring several water quality parameters including: temperature, dissolved oxygen, pH, turbidity, conductivity, and salinity.

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Samplings of human aspects include creel surveys and utilization of the iSportsman program to provide usage and harvest data of FAPH recreational fisheries.

Figure 8-1. Blueback Herring

Figure 8-2. Electroshocking of Fish for Sampling

8.4.1.4 ANGLING CREEL LIMITS

Creel limits are one of the best tools that managers have to manipulate fish populations within a small impoundment used for public recreational fishing. Different species and/or size classes of those species can either be targeted or protected based on the limits set in the regulations. In order to be effective, creel limits depend on anglers following regulations, sound law enforcement, and some harvest by anglers. Creel limits are not effective when anglers switch to catch and release only mindset. Angler survey data on angling location, duration, species/number caught/harvested is critical information for proper pond and species management (Refer to APH200-10 for current regulations).

Table 8-4. Managed Impoundments

Impoundment Name	Location	Size (acres)
Beaver Dam Pond	TA 1A	9.0
Bowies Pond	TA 6C	29.8
Bullocks Pond	Rec Area	7.8
Buzzard Roost Pond	TA 1A	13.5
Dirt Bridge Pond	TA 22B	3.6
Engineer Pond	Rec Area	3.7
Fish Hook Lake	TA 22A	5.0
Herns Pond	TA 20B	4.7
Laser Range Pond	TA 19C	10.9
Lower Travis Lake	Rec Area	15.5
Lunker Hole Pond	TA 5A	10.0
Reynolds Run Pond	TA 2	12.0
Smoots Pond	CA 11A,B,12	45.1
Upper Travis Lake	Rec Area	22.1
Whites Lake	CA 16/17	71.3
	TOTAL	**263.9**

8.4.1.5 STOCKING

Initial stocking of ponds was considered necessary to obtain the proper species and populations desired. Additional stocking has been conducted based on sampling data and upon availability of fish at the hatcheries. All stocking has been done based on sound fisheries management principles. Primary species stocked are

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largemouth bass, channel catfish, trout, bluegill, and black crappie. Triploid grass carp for aquatic vegetation control have also been stocked where necessary.

8.4.1.6 HABITAT ENHANCEMENT

FAPH implements aquatic habitats improvements to provide habitat for foraging, cover, reproduction, and escape. Examples of these improvements include:

a. emplacing artificial fish reefs

b. emplacing catfish nesting structures

c. felling trees along the shoreline

d. control of sedimentation through dredging and prevention

e. manipulation of water levels

f. restoration of fish passage.

Freshwater streams and impoundments are typically culverted at one or more junctures with military access trails or installation roads, both of which require extensive maintenance. When culverts need to be replaced, they are typically countersunk to ensure fish passage. Replacement of culverts shall be timed to the greatest extent practicable to be replaced outside the breeding season (e.g., 1 March – 30 June) for aquatic species to avoid water level fluctuations at this critical time.

8.4.1.7 AQUATIC VEGETATION CONTROL

Mechanical, chemical, and biological methods are used to control undesirable, invasive, or overabundant aquatic vegetation to ensure military and recreational utilization of surface water resources. In most cases the biggest problems are caused by bladderwort (*Utricularia* spp.) negatively impacting fish communities and recreational use of the impoundments of FAPH. Bladderwort is free-floating vegetation that traps aquatic invertebrates in its “bladders,” therefore competing for the food supply necessary to YOY (young of the year) fish. Methods of control include chemical application followed by stocking of grass carp. All grass carp stocked in FAPH waters must be sterile (triploid) and unable to establish a reproducing population. Yellow water lily (*Nuphar spp.*) provides beneficial habitat but can in some instances limit recreational value when too much surface area of a water body is occupied by this species. Chemical and mechanical methods of control are the most common for this type of emergent vegetation. All chemical applications shall be applied consistent with FAPH’s IPMP (Appendix J).

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8.4.1.8 WATER QUALITY PROTECTION

Presence of sensitive/tolerant species as well as changes in aquatic communities may be an indicator of water quality within the watershed. These indicators will be monitored through regular sampling.

FAPH implements a 100-foot RPA buffer around streams, ponds, and wetlands to ensure adequate protection of water quality from non-point source pollution and conservation of riparian habitats (see Chapter 12 of this INRMP). The RPA prohibits construction, pesticide or herbicide application, and even-aged timber harvests within the buffer. This ensures adequate water quality protection for tributaries that drain to the Rappahannock and Mattaponi rivers which harbor diverse assemblages of freshwater invertebrates.

8.4.1.9 TECHNICAL ASSISTANCE

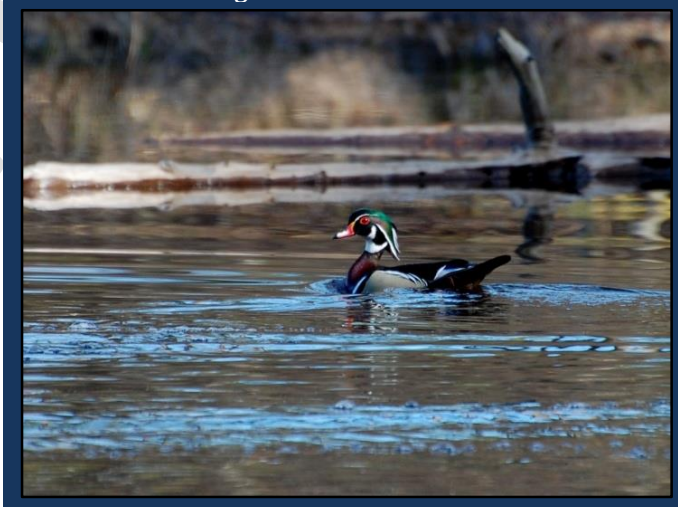
Both the USFWS and the VDGIF have provided technical fisheries assistance, professional advice, and fish stocking to FAPH. The providing office for the USFWS is the Office of Fisheries Assistance, Gloucester Point, Virginia, and for the VDGIF, is the Fisheries Division Regional Office at Fredericksburg, Virginia.

8.4.2 WATERFOWL

8.4.2.1 WATERFOWL RESOURCES

FAPH is located within the Atlantic Flyway in close proximity to the Rappahannock River and the Chesapeake Bay. Portions of FAPH fall within the Lower Rappahannock River Important Bird Area. FAPH provides an abundance of valuable habitat utilized by a variety of waterfowl for resting and wintering. In addition, several major species use the habitats of FAPH for breeding. The major species that nest on FAPH include wood duck (*Aix sponsa*, Figure 8-3), mallard (*Anas platyrhynchos*), American black duck (*Anas rubripes*), and Canada goose (*Branta canadensis*). An abundance of beaver ponds and many miles of forested streams provide excellent nesting and rearing habitat for cavity nesters such as the wood duck (Figure 8-3).

Figure 8-3. Wood Duck



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8.4.2.2 WATERFOWL MANAGEMENT

8.4.2.2.1 RECREATIONAL HUNTING ROGRAM

FAPH offers recreational waterfowl hunting opportunities to the public in accordance with state and federal managed regulations. Implementation of iSportsman program provides valuable hunter usage, effort, and harvest data that had not been collected in the past. This information will greatly improve FAPH F&W's ability to soundly manage this resource.

8.4. 2.2.2 NEST BOXES

Throughout most of FAPH, naturally occurring nesting cavities are relatively abundant. In areas that do not provide an adequate supply of nesting cavities, nest boxes may be placed to support nesting.

8.4.2.2.3 RESIDENT GEESE

As the resident Canada goose population continues to increase, closer monitoring of the population is necessary. Methods of control include increasing hunter harvest, capture and relocation during summer molting, and other lethal and non-lethal methods described in the FAPH Wildlife Aircraft Strike Hazard (WASH) plan. All resident goose control shall be conducted in accordance with all applicable federal and state laws and regulations.

8.4.2.2.4 MOIST SOILS

Opportunities for moist soil management should be considered when a water level drawdown of ponds occurs. During the drawdown, the growth of desirable waterfowl forage along the shorelines may be encouraged by appropriate managed plantings. These types of plantings will increase the available forage base and have a positive effect on FAPH's waterfowl populations. Impoundments with water control structures lend themselves to moist soils management.

8.4.2.2.5 BEAVER PONDS

Due to the absence of large rivers and reservoirs within the boundaries of FAPH, the ponds created by beaver activity are the primary habitat type for waterfowl. Trees within these beaver ponds often die off and provide valuable nesting cavities for waterfowl and a vast array of other species. Beaver ponds can also have negative impacts on threatened and endangered species and infrastructure. In some instances, drains may be inserted into culverts to allow partial draw-downs to prevent road flooding or damage to other sensitive resources. It is vital that all interested parties work together to limit damages without reducing quality waterfowl habitat.

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8.5 MIGRATORY BIRD CONSERVATION

8.5.1 GENERAL INFORMATION

FAPH implements conservation measures to maintain populations of migratory bird species in a manner that avoids, minimizes or mitigates the take of migratory bird species in accordance with The Migratory Bird Treaty Act (MBTA) and associated federal / DOD guidance (Table 8-1). Though more than 70 species of birds are currently known to inhabit FAPH, 16 of those species are migratory bird species recognized as species of concern by the USFWS (Table 8-5). Consequently, these species warrant additional management and conservation considerations to maintain compliance with the MBTA.

Table 8-5. Migratory Birds of Conservation Concern (USFWS 2008) found on FAPH

Common Name	Scientific Name
Bald Eagle	*Haliaeetus leucocephalus*
Solitary Sandpiper	*Tringa solitaria*
Chuck-will's-widow	*Antrostomus carolinensis*
Whip-poor-will	*Antrostomus vociferus*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Brown-headed Nuthatch	*Sitta pusilla*
Wood Thrush	*Hylocichla mustelina*
Black-throated Green Warbler	*Setophaga virens*
Prairie Warbler	*Setophaga discolor*
Cerulean Warbler	*Dendroica cerulea*
Prothonotary Warbler	*Protonotaria citree*
Swainson's Warbler	*Limnothlypis swainsonii*
Kentucky Warbler	*Geothlypis formosa*
Bachman's Sparrow +	*Peucaea aestivalis*
Rusty Blackbird	*Euphagus carolinus*
+ Historic occurrence; no recent occurrences from current surveys	

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8.5.2 BALD EAGLE MANAGEMENT

Portions of FAPH fall within the Lower Rappahannock Important Bird Area (IBA). This IBA is known for supporting the densest breeding population of Bald Eagles in Virginia and one of the largest summer and winter eagle concentration areas in eastern North America.

FAPH supports a sizeable breeding population with a historical high of 11 active nests. The National Bald Eagle Management Guidelines with the associated protection buffers (330 feet or 660 feet depending on the time of year and proposed activity) are implemented for protection of known nesting locations. Annual ground observation surveys of nest sites are conducted for the monitoring activity and productivity.

An early spring aerial survey shall be conducted to determine nesting success. A late winter aerial survey shall be conducted to aid in locating new or relocated nest sites. There are several areas of FAPH suspected of having a nest location based on adult eagle presence during the nesting season. It is difficult to keep an accurate count of active nests without aerial observations. These flights should be repeated every other year to properly monitor nest activity and new nest locations.

In order to comply with the MBTA and the Bald and Golden Eagle Protection Act (BGEPA), FAPH must maintain accurate records for nest locations. Nest locations are integrated into Range Operations and land management decision-making. The F&W program also conducts awareness training for the civilian staff for cultural awareness of MBTA and BGEPA requirements.

All incidences of injured eagles shall be handled and transported by FAPH wildlife biologists and transported to a federally licensed rehabilitator for care and treatment.

If a deceased eagle is found, FAPH wildlife biologists will contact the USFWS for the transfer of custody.

8.5.3 MIGRATORY BIRD CONSERVATION MEASURES

Migratory bird conservation is integrated into installation operations across functional areas to ensure compliance with all applicable laws, regulations, and guidance. Specifically, these conservation measures entail:

a. Refraining from annual mowing on approximately 30% of accessible semi- / unimproved grounds until after the nesting season

b. Maintaining vegetation cover (primarily forest) within 100-feet of streams and wetlands via establishment of Resource Protection Area (i.e., riparian) buffers (see Chapter 12 of this INRMP)

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c. Cultural awareness by FAPH staff of prohibitions on handling / removing bird nests and eggs

d. Maintaining migratory bird habitat diversity through diversification of forest management practices, to include:

   i. the retention of snags

   ii. prescribed burning of forests and grasslands

   iii. maintaining and developing (where appropriate) savanna-like habitats

   iv. managing forests to retain hard mast producing forest types (e.g., oak/hickory)

   v. retaining late seral old-growth communities on the landscape

   vi. reducing forest edge and habitat isolation by transitioning from managing numerous small forest stands to larger, more contiguous forest management units

e. Participation in collaborative research with universities and state agencies (where appropriate)

f. Implementation and adherence to the National Bald Eagle Management Guidelines

g. Monitoring of migratory bird populations through breeding bird surveys

h. Maintaining migratory bird species lists to ensure an adequate basis for land management and planning

i. Maintaining and increasing native warm season grasslands (where appropriate)

j. Coordination with the USFWS, Division of Migratory Birds, in the event a proposed action may result in the take of a migratory bird

All of the above conservation measures provide benefits to migratory birds to include the species of concern identified by the USFWS.

8.6 CONSERVATION LAW ENFORCEMENT

8.6.1 LAW ENFORCEMENT

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Natural and cultural resources management on FAPH is governed by federal / state laws and regulations that provide for the protection of the resource and may also simultaneously address public use of that resource. Consequently, specialized law enforcement (i.e., conservation law enforcement) is required to ensure adherence to federal/state statutes and regulations pertaining to environmental, natural and cultural resources occurring on FAPH (Table 8-6).

Table 8-6. Federal Natural and Cultural Resource Laws Requiring Enforcement by CLEO

Natural & Cultural Resources	Associated Federal Laws
American Indian Religious Freedom	42 U.S.C. Sec. 1996
Antiquities Act	16 U.S.C. Sec. 431-450ss-7
Archaeological and Historic Preservation	16 U.S.C. Sec. 461-469o
Archaeological Resources Protection	16 U.S.C. Sec. 470aa-470mm
Bald and Golden Eagle Protection	16 U.S.C. Sec. 668-668d
Coastal Zone Management	16 U.S.C. Sec. 1451-1466
Endangered Species	16 U.S.C. Sec. 1531-1544
Federal Insecticide, Fungicide, and Rodenticide	7 U.S.C. Sec. 136-136y
Federal Land Policy and Management	43 U.S.C. Sec. 1701-1787
Noxious Weeds	7 U.S.C. Sec. 2814
Fish and Wildlife Conservation	16 U.S.C. Sec. 2901-2912
Game, Fur-Bearing Animals, and Fish	16 U.S.C. Sec. 661-667e
Lacey Act	16 U.S.C. Sec. 3371-3378
Migratory Birds	16 U.S.C. Sec. 703-712
Migratory Bird Conservation	16 U.S.C. Sec. 715-715s
Migratory Bird Hunting and Conservation Stamps	16 U.S.C. Sec. 718-718s
National Environmental Policy	42 U.S.C. Sec. 4331-4370h
National Historic Preservation Act	16 U.S.C. Sec. 470
Native American Graves Protection and Repatriation	25 U.S.C. Sec. 3001-3013
Recreational Hunting Safety	16 U.S.C. Sec. 5201-5207
Rivers and Harbors Act of 1899	33 U.S.C. Sec. 401, 403

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Table 8-6. Federal Natural and Cultural Resource Laws Requiring Enforcement by CLEO	
Natural & Cultural Resources	**Associated Federal Laws**
Sikes Act	16 U.S.C. Sec. 670-670f

Conservation law enforcement is administered and implemented by the DES-PMO with support from VDGIF (i.e., Game Wardens).

8.6.2 TRAINING

Per DODI 5525.17, all conservation law enforcement officers shall successfully complete Land Management Police Training Program (LMPT) at the Federal Law Enforcement Training Center (FLETC) or equivalent natural resource training as required by the DOD Police Officer Standards and Training (POST) Commission within one year of being hired. The LMPT is the basic training program for uniformed officers charged with enforcing Federal laws and regulations on Federal and tribal lands and waters of the United States and its territories.

Military police, security forces, master-at-arms, component civilian police, or other law enforcement personnel who are temporarily or seasonally assigned to CLEP are not required to complete LMPT but shall be supervised by a fully certified conservation officer and receive on-the-job training specific to conservation law enforcement.

DOD Components may augment CLEP forces with the following personnel and under the following restrictions:

a. Military police, security forces, master-at-arms, component civilian police, or other law enforcement personnel who are temporarily or seasonally assigned to CLEPs are not required to complete LMPT but should be supervised by a fully certified conservation officer and receive on-the-job training specific to conservation law enforcement. Augmented personnel are only to be used for temporary or seasonal assignment and are not to be used to fulfill the full-time Conservation Law Enforcement Officer (CLEO) requirement.

b. Non-law-enforcement personnel, including General Services 400 series civilians and active duty personnel, may assist conservation officers with case-specific investigations and education and awareness activities. They may not:

    i. Carry out direct law enforcement duties unless their core personnel document or position description includes law enforcement duties and they have completed LMPT at FLETC.

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ii. Carry weapons in performance of this duty (unless so authorized and provided by the commander after individuals have received appropriate training and are qualified with the authorized weapon).

DOD CLEO shall complete a minimum of 40 hours of annual refresher training, specialized to conservation law enforcement. This refresher training is after completion of FLETC LMPT and is not to be considered a replacement for it.

Provide education and training to the installation populace, workforce, and general public to prevent inadvertent violation of natural resource and cultural resource laws.
FAPH CLEOs shall attain administrative access to FAPH's iSportsman system.

8.6.3 LAW ENFORCEMENT COORDINATION

8.6.3.1 COORDINATION WITH OTHER FEDERAL AND STATE AGENCIES

Each DOD Component or its designated lead office should address specific conservation law enforcement issues relevant to its component with other national headquarters offices of federal agencies such as the Departments of Interior, Homeland Security, Commerce, and Agriculture. The major command, regional office, or installation should address conservation law enforcement issues with respective regional offices of federal, State, and tribal fish and game agencies.

8.6.3.2 NATIONAL LEVEL COORDINATION

Each DOD Component is responsible for national-level liaison and contact with the departmental law enforcement officials and all federal law enforcement, security, and intelligence agencies on all matters relating to conservation law enforcement. On national matters pertaining to DOD lands, the Under Secretary of Defense (Personnel and Readiness) (USD (P&R)) Law Enforcement Policy and Support Office will consult with the appropriate DOD Component.

8.6.3.3 INTERNATIONAL COORDINATION

If an international agreement permits such activity, local liaison is allowed with cooperating foreign agencies adjacent to the international border of the United States relating to matters of mutual concern and assistance. This coordination and cooperation with local foreign law enforcement officials and agencies will be in accordance with applicable legally binding international agreements between the United States and Mexico or Canada, and will be conducted in a circumspect manner to avoid violation of the sovereignty of the other country.

8.6.3.4 REGIONAL LEVEL

The major command or regional office is the appropriate level for interagency inter-governmental coordination and environmental planning with other federal, state, and tribal agencies. The regional office or major commands should conduct all coordination and communication for regional and multi-state issues.

8.6.3.5 STATE AND LOCAL LEVEL

The major command or regional criminal investigative office, installation lead criminal investigator, and conservation officer are concurrently responsible for liaison with local, State, tribal, and federal agencies on matters relating to natural and cultural resource law enforcement.

8.6.3.6 INDIVIDUAL COOPERATION

Criminal investigators and conservation officers are expected to make every effort to cooperate with and assist officials of State fish and game agencies and law enforcement officials of other federal, State, tribal, and local agencies located in their geographic area of responsibility for the purpose of enforcing natural and cultural resource laws on DOD installations.

8.6.4 REPORTING

Report and track non-compliance with laws and regulations (both military and civil) in accordance with Military Service criminal data reporting procedures.

8.7 GAME MANAGEMENT

8.7.1 EASTERN WILD TURKEY

8.7.1.1 MANAGEMENT PRACTICES

Wild turkey (*Meleagris gallopavo sylvestris*) management provides habitats, and population densities that are vital to sustain native large game species. The wild turkey is a very popular hunted big game species, especially in the spring, and provides recreation by both hunting and wildlife viewing. This species is often visible to the public, and they tend to take great interest in forestry management practices that might impact the turkey population. Management objectives are to: (1) provide diverse habitats that are beneficial to turkeys with the goal of maintaining or increasing population, (2) conduct population and nesting success surveys, (3) manage predation of the wild turkey by maintaining a controlled recreational trapping program, and (4) implement a nesting success research program using remote sensing techniques.

8.7.1.2 HABITAT REQUIREMENTS

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Eastern wild turkeys occupy a wide range of habitats, but diversified habitats provide optimum conditions. In the southeast, bottomland hardwood forests in association with a mixture of upland fields, forests, cropland, and pastures is the preferred turkey range. Opening areas and widely spaced burned pine areas forming savannas scattered through a forest provide important brood-rearing, feeding, and dusting sites.

8.7.1.2.1 FORAGE

Wild turkeys are opportunistic omnivores and their diet reflects the types of plant and animal food that is available at the time. Crops and gizzards of 537 turkeys, collected in November and December in Virginia, contained roots, tubers, bulbs, stems, buds, leaves, flowers, fruits, seeds, pods, capsules, and seed heads, comprising a total of 354 species. Animal foods consisted of adults, eggs, egg cases, larvae, nymphs, pupae, and cocoons of more than 313 species. Ninety-five percent of the food eaten was plant material with the most prevalent being acorns, beechnuts, dogwood berries, grass seed and leaves. In the late summer and fall, a major turkey food source is crabgrass (*Digitaria sanguinalis*). In the summer months insects are an exceedingly important food, especially for young turkey poults.

8.7.1.2.2 FOREST AND FIELD USE

A mixture of forest and openings provide habitats that are superior to extensive forested areas. Turkeys appear to prefer mature woodlands that are open. They also spend a large amount of time loafing and feeding in open areas. Poor habitats for turkeys include large acreages of even-aged short rotation pine plantations, and intensive agriculture. Additionally, food can be a limiting factor in areas with large pure stands of pine (*Pinus* spp.).

8.7.1.2.3 NESTING HABITATS

The ground nesting turkeys prefer to nest in fairly dense brush, deep grass, or fallen tree tops. Nests are frequently found at the base of trees and in logging slash and broken treetops. Research has revealed that an important component in nesting location is lateral cover that obscures horizontal vision. Turkey nests are often found in forest opening at FAPH. These openings may be brushy fields, right of ways, or the result of logging.

8.7.1.2.4 REPRODUCTION

Turkey breeding in Virginia generally begins in late March, and mating peaks about mid-April. A second peak of gobbling occurs about 2-4 weeks later when most hens are nesting and no longer accompanying the males. Nesting success of turkeys is generally low but varies widely from year to year. A five year study of Virginia hen turkeys found that ninety-five percent attempted to breed, and only a third of those hens were successful at hatching eggs. Of the average hatch of nine poults, only half of those will survive past four weeks old, at which time the survival rates generally increase sharply. An average clutch is 10-15 eggs laid over 12-18 days. Incubation

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takes 28 days. At FAPH, the first clutches of poults are typically observed in late April or the first week of May. Hens that lose a nest to predation typically try a second nesting attempt. The young poults typically remain with their mother until the following spring.

8.7.1.2.5 MANAGEMENT RECOMMENDATIONS

Timber management is the most important factor influencing wild turkey populations on FAPH. Hunting harvest has the potential to be limiting to the population especially if poaching is a significant problem. Predation of nest, poults, and adults by furbearers and avian predators is often an unknown, causing populations to fluctuate and greatly influencing numbers lost. Exact population numbers are impossible to obtain given the dynamic of turkeys and the mass acreage of FAPH, but surveys and census can give indices of population trends. To the biologist, the tools of management are the landscape habitats and hunting season length and bag limits. While avian predators are strictly protected, furbearer populations can be influenced by a recreational trapping program.

8.7.1.2.5.1 HABITAT MANAGEMENT

The most important habitat type for turkeys is mature mast producing hardwoods. Other habitat features are also critical. Water is typically not a limiting factor in the Mid-Atlantic States, but it is important that hardwood areas contain numerous wetland areas, streams and seeps. Forest openings or interspersions of varied habitat types are also important for successful turkey management. These include fallow fields, old home sites, conservation plantings, and power line right of ways.

Each timber sale or other land management activity is evaluated under NEPA procedures. The FAPH F&W Branch shall evaluate each action affecting turkey habitat to determine opportunities to mitigate damages or expand opportunities for improvement of habitat as described in this chapter. Basic habitat recommendations are:

a. Use selective harvesting uneven-aged management for hardwood stands

b. Harvest rotations of 50-60 years in pines and 100-120 years in hardwoods are recommended

c. Maintain mature riparian habitat stringers adjacent to cutover forest

d. Distribute small pine clearcuts (20 acres average size) throughout a forest compartment to accentuate habitat diversity

e. Conduct patchy prescribed burns, implemented at 1 to 3 year intervals

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f. Thinning operations should be conducted in even-aged timber stands to promote wide spacing of trees which allows for more plant diversity in the ground cover and understory

g. Maintain scattered small openings through the woodlands to be managed by burning, mowing, release, and cultivation practices; a density of 8 openings/mi^2 is recommended

h. Exclude mowing from late April-late June when feasible

8.7.1.2.5.1.1 TIMBER MANAGEMENT

The management tool that has the greatest impact to wild turkeys is forest management. Silvicultural practices and decisions are crucial in the success of wild turkey management. Forest managers must carefully plan and implement harvesting techniques and schedules that provide all the elements necessary for an abundant wild turkey population. For additional forest management information relating to FAPH please refer to Chapter 7 of this INRMP.

8.7.1.2.5.1.1.1 EVEN-AGED FOREST MANAGEMENT

Because oak species are so vitally important to wild turkeys, the even-aged management method is recommended to maintain oak regeneration, create an open understory, and provide stand diversity. Oaks should be managed for the widest variety of species possible to provide acorns in years when other species of oak have mast failures. White oak (*Quercus alba*) is a favored wild turkey species. White oaks are long lived and require longer rotations to provide a high percentage of mast producing trees. Rotation lengths of 120-200 years are recommended with a management plan to balance age classes and create a mosaic of different aged trees across FAPH. Shelterwood cuts and clear cuts are two popular methods of timber management that can be used to encourage oak regeneration. Shelterwood cuts should be used in stands where there are some oak species but the stand is dominated by other undesirable species. Shelterwood cuts favor oak species as they leave trees to assist in their establishment in the stand. Evenly distributed clearcuts that are relatively small in size, (5-20 acres), are beneficial when managing habitat for turkeys.

8.7.1.2.5.1.1.2 UNEVEN-AGED FOREST MANAGEMENT

Selective harvesting of some stands may be beneficial to wild turkeys if the selected leave trees are mast producing oaks that have large crowns capable of producing large amounts of acorns. Other leave trees should be other mast producing desired species such as black gum (*Nyssa sylvatica*), American beech (*Fagus grandifolia*), and black cherry (*Prunus serotina*). Den trees should also be left. Undesirable species of oaks and hickories that are poorly formed or have narrow crowed crowns should be thinned. The thinning should have a wide enough spacing that the trees left have room for crown expansion and also allow some sunlight to hit the forest floor, encouraging the growth of some beneficial midstory trees such as dogwood (*Cornus florida*) and

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serviceberry (*Amelanchier* spp.), as well as wild grape (*Vitis riparia*). Overstocked loblolly pine (*Pinus taeda*) stands that are even-aged allow very little sunlight to reach the forest floor and are of minimum benefit to wild turkeys. Thinning loblolly pine stands reduces tree density and opens the forest canopy, allowing more sunlight to reach the ground and stimulate growth of grasses and forbs. Removing every fourth row of planted pines in early thinning produces travel and feeding corridors for turkeys. Target basal areas from 50 – 30 sq.ft./acre produce optimal habitat.

8.7.1.2.5.1.2 PRESCRIBED BURNING

Prescribed fire is a valuable tool in the management of wild turkeys. Just as thinning stands encourages the growth of grasses and forbs, prescribed burning when performed in the proper season and weather conditions also stimulates these species' growth and reduces the amount of woody brush and shrubs, keeping an open understory. Burns that are conducted in 1 – 3 year intervals help to maintain this desirable condition. Burns should be conducted only in the late winter and very early spring. Fall burns are detrimental to the wild turkey because they destroy most food and cover to survive the winter. Late spring burns will likely destroy turkey nest and kill eggs and young poults (See Chapter 7 of this INRMP).

8.7.1.2.5.1.3 CONSERVATION PLANTINGS AND MAINTAINED OPENINGS

FAPH F&W maintains openings across the garrison with the goal of managing to benefit wildlife as well as providing areas for military training. These openings are important to wild turkeys for strutting, bugging, nesting, and foraging. Only 6% of FAPH is maintained in this manner. Research has shown that anywhere from 3 - 50 % of the managed land should be maintained in this type of opening for proper wild turkey habitat. FAPH has a deficit of this type of permanent, maintained opening.

8.7.1.2.5.1.4 POPULATION DATA

Wild turkey populations can vary greatly annually depending on predation, habitat, food, water, disease, or weather. Population surveys are an important tool in determining trends in turkey populations and assisting biologist in management decisions. Turkey weights are obtained for both sexes as well as for adult and juvenile age classes from birds brought to the check station. Average weights of adult males harvested during the fall ranged from 17 - 19 pounds and juvenile male weights fluctuated around 12 pounds. Average spring gobbler weights ranged from 18 to 20 pounds.

8.1.2.5.1.5.2 POPULATION SURVEYS

Annual spring gobbler counts should be conducted the last week of March through the first two weeks of April to provide a spring index of turkey abundance. Gobbler counts are conducted along established routes using timed stops for noting gobbling activity and numbers of turkeys.

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Summer hen-brood counts should be conducted May through August to provide a useful productivity index.

8.7.2 WHITE-TAILED DEER

8.7.2.1 MANAGEMENT PRACTICES

White-tailed deer (*Odocoileus virginianus*) management is the most watched, criticized, and monitored of any wildlife species. White-tailed deer is by far the most popular game animal and is economically important but also treasured by wildlife watchers and home owners. Seeing deer is pleasurable to many and often a trip highlight that can stop traffic in areas while enjoying viewing the animals in their habitat. Many conservationists call the white-tailed deer America's greatest wildlife management success story. White-tailed deer, once headed for extinction, are now common in most of the United States if habitat and climate are suitable. Without proper management, deer can become a nuisance due to overpopulation that results in vegetation damage, habitat alterations from over-browsing, and deer/vehicle collisions. Overpopulation of deer can result in impacting other species of wildlife by reducing available food, cover, or nesting areas. Deer also act as a host to several species of ticks that are known to transmit diseases to humans. Management of deer populations at FAPH by the use of recreational hunting offers a popular outdoor experience to many and allows managers to obtain biological information from the harvested deer to sustain a healthy quality deer herd that conforms to tolerances of the garrison.

8.7.2.2 HABITAT REQUIREMENTS

White-tailed deer occupy a wide range of habitats and can adapt too many that other species cannot. General requirements include access to water, quality forage, and cover. Factors that influence deer are herd structure, dynamics, population, disease, the soil's natural fertility, and the presence of predators.

8.7.2.2.1 FORAGE AND WATER

Unlike some domestic species that stand at one location and graze, deer tend to be browsers while foraging. Deer tend to take a few bites of vegetation and then move a few feet before taking the next bite. They eat a wide variety of vegetation that satisfies their nutritional needs. For white-tailed deer to reach optimum body size and full antler growth, they require at least 16% protein in the plants they consume. Protein content varies seasonally and by plant type and part. For forages collected at FAPH, woody browse was in the 4-9% range and herbaceous plant material in the 15-34% range. Forage availability and quality runs in seasonal cycles at FAPH. Deer face two periods of nutritional stress yearly, one in mid-summer when forage quality drops and the other in winter when forage quality is poor as plants are dormant and sometimes limited in snow and ice events.

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Man-made reservoirs, beaver ponds, perennial streams, and springs provide a year-round supply of water within deer home ranges at FAPH. Therefore, water is not a limiting resource.

8.7.2.2.2 COVER

The type and amount of cover required by white-tailed deer depends to a great extent upon regional conditions, particularly weather and predation. In the northern parts of deer range, conifer stands provide essential thermal cover during severe winter weather. Winter cover is less critical for deer in more southern latitudes. In the FAPH area, snow is intermittent or almost entirely absent; hardwood brush, mountain laurel thickets, and young pine stands are readily available to provide protective cover.

Dense escape cover may help deer survive the hunting season. In addition, as coyote (*Canis latrans*), and American black bear (*Ursus americanus*), move into the FAPH region, cover to protect fawns from predation by these species will become more important for overall fawn survival.

8.7.2.2.3 HABITAT INTERSPERSION

Deer populations appear to thrive in areas of high habitat diversity. Any given habitat type usually provides optimal food resources during only one or two seasons; therefore, the interspersion of habitat types throughout a home range affords a wider range of year-round food and cover resources than do large uniform habitats. Important habitat types include mature forests (40 + years of age), early successional forests (15 years of age or younger), open grassland areas, wetlands, and agricultural lands. With the juxtaposition of several habitat types, deer also receive benefits from the intervening ecotones. Deer tend to use diurnal habitats that offer adequate cover and nocturnal habitats that have the best foraging areas.

8.7.2.2.4 SOIL FERTILITY

Inherent soil fertility affects the nutrient quality of plant materials eaten by deer and is ultimately reflected in the physiology of the animals. Mineral deficiencies in forages grown on soils of low fertility may affect population characteristics such as density, productivity, average weights, and antler development. In a practice known as geophagy, deer ingest soils to take in salts and minerals. Deer will visit both artificial and natural “licks” to consume these dietary supplements. This practice occurs mainly in the spring and summer.

FAPH soils are generally acidic, highly eroded, and infertile. The best agricultural soils at FAPH are generally located in Training Areas 16A, 16B, 25A, and 26A. These areas are located closest to the Rappahannock River and contain river bottom rich soils that are higher in natural fertility and organic matter. Because the river bottom acreage in these areas is minimal, the beneficial impact to deer at these locations is not significant compared to other areas of the garrison.

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8.7.2.3 DEER HABITAT RESOURCES AT FAPH

FAPH lies in the Middle Atlantic Coastal Plain Region. The garrison is 85-90% wooded, which leaves the majority of the deer herd dependent on forest plants and mast to survive. The limited amount of open areas includes lawns, road shoulders, right of ways, landing and drop zones, agricultural fields, and conservation planting maintained by the F&W Branch. Forest age and management techniques greatly influence the quantity and quality of deer habitat. Route 301 splits FAPH, with the range and impact areas located south of Route 301 and the majority of the maneuver training areas north of the road. Habitats in the range and impact areas vary from the maneuver training areas due to the frequency of both prescribed fire and wildfire. These habitats generally have open forest canopies allowing for diverse forbs and shrub growth. Forests in training areas are managed for commercial forestry and troop training mission enhancement. Forest habitats in training areas typically contain a higher percentage of closed canopies and, therefore, have a lower percentage of understory than the range and impact areas. The oak and hickory forests provide suitable browse for a sizeable herd, but the quantity and quality is below that of the fire maintained areas. Pine forests, particularly loblolly pine stands, tend to have closed canopies allowing little sunlight to reach the forest floor, resulting in poor deer habitats. With such a large majority of the garrison being composed of oak- hickory forests, the oak mast crops at FAPH are important to herd and forest health. When there is a mast failure deer will depend on low and mid-story vegetation to survive the winter months. These forages provide poorer nutrition but are capable of maintaining deer through the winter. Browsing deer are capable of drastically altering forest composition, especially when overpopulated or during mast failure years. It is important to manage herds at these stress year levels to reduce forest impacts.

8.7.2.3.1 MANAGEMENT PRACTICES

Habitat management, deer population estimation, and harvest management are primary deer management practices. Any land use actions that affect vegetation composition and structure will affect deer habitat quality. Habitat management consists of practices of forestland and open land vegetation management that enhance food quality for deer. Population management primarily involves the monitoring of herd numbers and/or physical condition to evaluate requirements for population control or opportunities for population expansion. Both habitat and population management are important for maintaining a herd in balance with the ecosystem.

8.7.2.3.1.1 HABITAT MANAGEMENT

Almost all terrestrial habitats that are vegetated within 5 feet of ground level will support white-tailed deer. Quality habitats are believed to be those that provide adequate year-round amounts of nutritious forage and adequate cover within an average home range area (one square mile). The vegetation types that contribute most to quality deer habitat appear to be young forests (<15 years of age), mature forests (>40 years of age), old fields, managed grasslands, and vegetated wetlands. The vegetation type that contributes the least to deer habitat appears to be pole size forests, 16-39 years of age.

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8.7.2.3.1.2 DEER POPULATION ESTIMATION

Both direct and indirect census methods are available for estimating deer density. Direct techniques involve counting actual animals and using the data to estimate the total population. Examples include: spotlight counts, aerial surveys, and drive counts. Indirect techniques rely upon counting signs and converting the data to an index that is relative to the total number of animals in a particular population; track counts and pellet group counts are indirect methods. Each census method has inherent shortcomings and constraints. Census techniques are seldom used as independent methods for estimating density but are best utilized in conjunction with one or more other techniques. The results obtained are not actual animal numbers present on a management area but are estimates of deer numbers that can be used to monitor trends in population density.

The spotlight count is a direct census technique used to inventory species such as deer that have a tendency to "freeze" when blinded by high power spotlights. Spotlight counts are a reliable, cost effective method used to census deer on relatively large tracts of land with minimum manpower and equipment expenditures. These counts are most reliably conducted in open range habitats. Because FAPH is mostly forested, spotlight counts are limited in applicability. They cannot be used at all while deciduous trees are leafed out; however, after leaf fall, there is some visibility into hardwood stands and the technique may be used. Recent research indicates that spotlight counts may not provide accurate enough data to meet herd management objectives. Remote camera sensing may provide more accurate data to meet herd management objectives.

Track counts are usually conducted in late summer when adult deer populations are more stable. Where it is not feasible to prepare road surfaces for a summer track count, counts are sometimes conducted after snowfall in the winter. However, counts taken during this time of year are likely to underestimate the actual deer density of an area, especially if they are conducted after the harvest season.

Improved roads and forest trails of known lengths are used as permanent transects and are sampled annually. About 24 hours after the completion of snowfall, 2-member sampling crews drive all transects and count the number of deer tracks observed on the transects. Density is estimated by using simple equations that relate the total number of tracks counted to the total number of miles censused and the average daily home range diameter.

Measurements of deer sex-age composition of the harvest taken from deer at game checking stations can be useful for reconstructing population structure. Average weights of deer, antler beam diameter of yearling bucks, and overall condition are useful indicators of range condition and the presence of disease conditions.

8.7.2.3.2 HARVEST MANAGEMENT

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Information from census data and habitat evaluation must be integrated to determine a deer population size compatible with deer range resources. Human social factors may also exert an important influence on management decisions, such as the demand by the public to reduce deer/vehicle collisions, observe deer, or preferences of hunters to bag trophy bucks. Major harvest strategies include:

a. Buck-only Harvest. Restricting hunting seasons to bucks only is the surest way to minimize the harvest. Buck only hunting results in the following: (a) high residual population of predominantly females; (b) low recruitment rates; and (c) legal bucks comprising 10% or less of the population.

b. Maximum Sustainable Yield. This strategy sometimes referred to as either-sex hunting, produces the greatest number of bucks. To obtain the maximum yield of bucks over time, both sexes and all ages of deer must be harvested. This results in a population where the buck and doe components are more nearly equal and recruitment is greater.

c. Quality Deer Management. Quality Deer Management (QDM) is the process of delaying harvest on young bucks combined with an aggressive doe harvest. The goals of this management practice are to achieve a 1:1 buck/doe ratio and to maintain a healthy deer herd that is in balance with its habitat. By not harvesting younger bucks, the age structure of the buck population increases and older bucks generally have larger body weights and antler size. The female segment of the population must be harvested to control overall population size and growth rates. A goal of this type of herd management is to produce and maintain a more natural density and social balance in the deer herd, where birth and death rates of male and female deer are nearly equal.

8.7.2.3.3 HUNTING

Since 1954, an either-sex (maximum sustained yield) shotgun hunting program has resulted in sustained annual harvests comprised of about 55% bucks and 45% does. Antlerless deer (either-sex) hunting has been legal during special archery season (4-5 weeks) and for 10 or more days during the firearms season. A special muzzle loading rifle season scheduled in Virginia during early November has been allowed at FAPH since 1998.

The percent of yearling bucks among adult deer (1½ years and older) has shown a decline since the early 1980's. This has resulted in greater buck survival and an increased harvest of bucks in 3½, 4½, and 5½ year age classes. The decreased harvest of younger bucks may be due to public support and practice of QDM.

Deer hunting was conducted in the RC south of Route 301 but was restricted in the past. In 2010, changes were made in the regulations to make these areas more accessible to the general hunting public. Because of the increase in hunting pressure in the RC, the need to participate in Virginia's

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Deer Management Assistance Program was removed. The deer herd in the RC is managed under modified regulations offering more either sex hunting days to control the higher deer populations.

An annual deer harvest around 1000 animals is the current maintenance biological goal. This number provides quality hunting experience for garrison hunters and keeps the population below cultural carrying capacity. Many factors effect populations that constant monitoring is required to evaluate populations, herd health, and habitat conditions.

8.7.2.3.4 HEMORRHAGIC DISEASE

In the early fall of 2012, the FAPH deer herd suffered a severe outbreak of epizootic hemorrhagic disease (EHD). EHD is common throughout the southeastern United States and is the most important infectious disease of the white-tailed deer. EHD is a virus that is transmitted by tiny biting flies in the genus *Culicoides.* Symptoms of the disease are a high fever, swollen head, neck, or tongue and difficulty breathing. In acute cases, deer die within 1 to 3 days of infection. It is more common for deer to become lame, lose their appetite, and become emaciated.

The FAPH deer herd population will be closely monitored following the 2012 outbreak of EHD and regulations may be altered in coming seasons to reduce either sex hunting days. Hunter harvest may drop for several years straight following an outbreak. Deer population density is not believed to be a major factor in the severity of the disease. Harvest records suggest that EHD outbreaks at FAPH may be cyclic.

8.7.2.3.5 PREDATION

In recent years, coyotes (*Canus latrans*) have migrated into the Mid Atlantic Coastal Plain. Signs and sightings of coyotes have become common, and the coyote is now well established at FAPH. Coyotes are not native to the eastern United States, but were a grassland species in the Midwest and West. This recent invasive eastern coyote is much different in size and behavior from the western. The eastward movements of coyotes into the Southeast have occurred rapidly, and have changed predation pressures on white-tails and many other species. The eastern coyote is very good at bypassing control measures. Recent radio telemetry research found that 40-50% of coyote's diet in the spring was fawns. Research concluded that predation levels by coyotes can be very high on white-tailed deer, and can have dramatic effects on southeastern deer populations. Research found recruitment rates have dropped dramatically across the southeast and recommended instead of removing 33% of the deer herd per year that 10% in coyote infested areas to maintain a level herd population. A study on Fort Bragg radio collared fawns and found only 18.5% survived. Sixty-eight percent of that mortality was attributed to coyotes. As coyote populations increase on FAPH and become established, it is probable that the number of either-sex hunting days will need to be drastically reduced from current levels.

Another recent predator arrival to migrate into the FAPH region is the American black bear. A native that was extirpated early in the settlement of Virginia, the black bear is moving back into

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the area from the western portions of the state. Black bears have proven to be effective predators of fawns, especially in sparse cover.

8.7.2.3.6 CHRONIC WASTING DISEASE

Chronic Wasting Disease (CWD) is a progressive neurological disease found in deer and elk. CWD belongs to the family of diseases known as transmissible spongiform encephalopathies, and is ultimately fatal. There is no evidence that CWD can be transmitted to domestic livestock or humans, but there are still concerns that somehow the agent causing CWD in deer will become pathogenic to humans. CWD has been found in Virginia in Frederick County.

The VDGIF is maintaining surveillance to monitor any sickly deer for CWD. FAPH biologists will maintain communication with military trainers, hunters, and VDGIF biologists and will rapidly respond to any reports of sick deer to collect tissues for disease testing. In the event that CWD positive deer are found in central Virginia, FAPH will implement a response plan in coordination with VDGIF biologists. The response plan will, at a minimum, include disease surveillance and public information releases.

8.7.2.3.7 MANAGEMENT RECOMMENDATIONS

8.7.2.3.7.1 HABITAT MANAGEMENT

Forest management practices that are recommended to enhance deer habitat include:

a. Make small (10-20 acre) scattered regeneration cuts that intersperse young forest stands within a mosaic of mature forest stands and woodland openings. For additional information on forest management practices on FAPH refer to Chapter 7 of this INRMP.

b. In loblolly pine stands, use prescribed burning on a 3-5 year rotation to reduce fuel and stimulate herbaceous and woody plant production in the understory. Tolerate occasional hot spots that may open the canopy and promote understory growth. Also, promote pre-commercial and commercial thinning to open the canopy and stimulate understory plant growth in 16-39 year old stands.

c. Within forest compartments, maintain 60% of management area in mast-producing forest >40 years of age.

d. Use appropriate agronomic practices to plant protein rich forage crops in support of multiple land-use objectives. Open range areas, rights-of-way, landing zones, skid trails, small clear cuts, and logging decks should be specifically targeted for nutritionally enriched plantings which support erosion control, woody vegetation control, and watershed protection as well as deer management. Opportunities should be sought to increase the amount of cultivated acreage in all management areas.

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8.7.2.3.7.2 POPULATION MONITORING

Track count, hunter survey, winter spotlight, and harvest data should continue to be collected to provide long-term data for monitoring deer population and range condition trends. Harvest data should continue to be maintained in a permanent database format for rapid processing and analysis.

8.7.2.3.7.3 HARVEST MANAGEMENT

A regulated doe harvest should be maintained to manage herd size within accepted and expected populations. Restrictions will be placed on buck harvest by limiting the number of antlered bucks a hunter may harvest per season. Antler restrictions will be maintained to allow a proportion of younger bucks to reach the older age classes to balance herd age structure.

8.7.2.3.7.4 PREDATION

Coyote populations and the impacts they are having on FAPH's deer population will be closely monitored, and the number of either-sex days will be adjusted to maintain desired deer numbers.

8.8 UPLAND SMALL GAME MANAGEMENT

Bobwhite quail, mourning doves, cottontail rabbits, woodcock, and gray squirrels are the upland small game species that occur at FAPH. The primary management objective is to maintain these species as part of the biological diversity of the landscape as well as to support recreational hunting when feasible. A major deficit to the management of all upland small game animals at FAPH is that under the former hunter tracking system no data of hunter effort or game harvested was collected for these species. In 2014, FAPH implemented the iSportsman electronic tracking and data collection system, correcting this deficit.

8.8.1 BOBWHITE QUAIL

The northern bobwhite (*Colinus virginianus*) was an important game species but has largely disappeared from the FAPH region over the past three decades. Bobwhites are still found at FAPH in small numbers, primarily in and around the fire maintained grasslands near range and impact areas. FAPH wildlife managers consider the bobwhite to be among the most threatened species at FAPH although it has no formal protection status. The primary management objective for the bobwhite is to halt the downward population trend and restore the health of this species. The primary management effort will be directed towards the creation of new quail habitat and connection of existing habitat via fire-ecosystem management. More intensified population monitoring must be conducted to determine the response of the population to management efforts, and to determine whether more intensive management, such as predator control, could help restore this population.

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8.8.1.1 POPULATION TRENDS

8.8.1.1.1 HARVEST DATA

Harvest declines after 1973 also occurred at other DOD installations throughout the southeast and suggest a significant bobwhite quail population decline throughout the mid-Atlantic region. Reduced funding for land maintenance programs has resulted in the loss of some early successional habitat. Invasive non-native plants such as tall fescue (*Festuca arundinacea*) and sericea lespedeza (*Lespedeza cuneata*) may have contributed to reduced habitat values. Greater survival among both avian and mammalian predators over this period may have increased predation rates. The gaps in hunter harvest records and current lack of means to accurately collect hunter data are major deficiencies in quail management at FAPH. Harvest data, hunter days, and quail harvest per hunter days, were collected from 1970-2005. After 2005, all data collection stopped on hunter harvested quail. Under the current hunter check in/out system, no hunter data is collected for any small game hunting or migratory bird hunting. Changing this deficiency should be a top priority.

An annual quail call count route was established at FAPH in 1976. Bobwhites were most abundant during the first few years of monitoring. Trends show a sharp decline in quail calls installation-wide. This is consistent with trends observed throughout the southeastern U.S.

8.8.1.1.2 HABITAT RESOURCES

Fire-maintained grasslands near the range impact areas provide bobwhites with the most favorable habitat conditions currently available on the installation. The creation of the maneuver corridors in the training areas has created the wide tree spacing needed for suitable quail habitat and, bobwhites now reside in these fire-maintained areas. Future plans include expanding these maneuver corridors which should be significantly beneficial to quail. Proper maintenance of these areas is crucial to preserve the usefulness of these areas to both quail and military training. Loblolly pine stands on FAPH are routinely thinned at wide spacing levels. Burning these stands provides excellent habitat for quail, promoting food and cover. Timber stands that are less than five years old are currently supporting a few coveys, but these heavy cutting areas' usefulness for quail are short lived.

Warm season grass plantings that are maintained by prescribed fire have proven to provide excellent habitat. Switchgrass (*Panicum virgatum*), big bluestem (*Andropogon gerardi*), and Indiangrass (*Sorghastrum nutans*)have provided excellent results in existing plantings. Forest resources management is discussed in detail in Chapter 7 of this INRMP and the Integrated Wildland Fire Management Plan 2012 (Appendix E).

8.8.1.1.2.1 HABITAT MANAGEMENT

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8.8.1.1.2.1.1 TIMBER MANAGEMENT

The key feature of timber management for quail is that adequate sunlight must filter through the forest canopy to permit the growth of understory shrubs and herbaceous vegetation. Even-aged systems such as clearcuts, seedtree, and shelterwood cuts can result in habitat conditions conducive to bobwhite production if these areas are not too extensive and are properly managed after the initial harvesting operation. A recommended timber management action to enhance quail habitat involves growing pine on a widely spaced 60 year rotation, prescribed burning every other year, and thinning to maintain about 50 square feet of basal area stocking.

8.8.1.1.2.1.2 CROPLAND, PLANTINGS, AND OPEN AREAS MANAGEMENT

To improve fields in row crops or small grain for quail, no practice is better than establishing field borders; these can be provided with a minimum or even no acreage taken out from production. Also, the placement of borders can be where crop yields are the poorest (along woodland edges, or woody fence rows and drainages). Borders also provide readily available protective cover required if quail are to glean the planted fields. Field borders can be attractive to quail for nesting or brooding as well. Pesticide applications should be reduces or eliminated from the first 50 feet of the field edge. These habitats are beneficial to bobwhite populations, especially when they are located adjacent to fire maintained grasslands or woodlands

One of the benefits of planting is that the site preparation often involves disking, which results in desirable brood habitat conditions later in the growing season. Disking alone may stimulate native plant growth, such as ragweed (*Ambrosia* spp.), that provides both fall food and summer brood foraging habitat. Food plantings made specifically for quail can be established as small blocks planted in long rectangular strips. The strips maximize edge, and bobwhites are more likely to utilize the entire planted area because food is located in a smaller area close to escape cover.

If woody cover is limiting, the establishment of bicolor lespedeza strips has been effective. These perennial strips are fire-adapted and, therefore, do not need to be protected from either prescribed or wild fires. The above ground stems of bicolor lespedeza are consumed by fire but the plants quickly grow back from heavy underground stems.

Virginia and other states are promoting the use of warm season grasses (WSG) for pasture management. Quails, rabbits, and songbirds thrive in patches of WSG. They offer better nesting and brood rearing cover and are superior winter cover, as well. WSG are perennial species that require little maintenance once established. One recommended species, Indiangrass, grows naturally at FAPH and readily colonizes burned areas, especially on moister sites. Broomsedge is a native WSG that normally colonizes abandoned or idle open lands at FAPH. It can be maintained by prescribed burning. It is not tolerant of shade and will die if woody vegetation becomes established.

Tall fescue has invaded some of the semi-developed open land (landing zones and right of ways) at FAPH because it is a very adaptable species that is easy to establish and is drought and disease

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resistant. It has been the recommended species for many maintenance and public works projects. For quail management, it is recommended that tall fescue pastures be converted to WSG or small grain plantings.

8.8.1.1.2.2 HARVEST MANAGEMENT

Healthy bobwhite populations can generally withstand fairly liberal hunting pressure. Quail populations have declined drastically in the last 50 years, due to limited and fragmented habitat. The FAPH population is not healthy or thriving but, as with many other regions, is in steep decline. Quail are extremely sensitive to climatic fluctuations that are beyond the control of wildlife managers. Drought and harsh winters will usually stimulate a significant population decline despite the efforts of wildlife management. The FAPH population is vulnerable, and hunting harvest limits were reduced in 2009.

8.8.1.1.2.3 MANAGEMENT RECOMMENDATIONS

8.8.1.1.2.3.1 FIRE ECOLOGY

Bobwhite quail management must be conducted in coordination with other land uses; therefore, training areas suited for quail management should have large tracts of open areas or have potential for the creation of open areas, and should be available for the use of prescribed burning.

8.8.1.1.2.3.2 FIREBREAKS

A disking maintenance plan for earthen firebreaks should be used to promote the development of quail brood rearing cover. Abandoned tracked vehicle routes through the fire ecology corridor should be stabilized and maintained as firebreaks and brood habitat strips.

8.8.1.1.2.3.3 FOREST MANAGEMENT

In fire ecology areas and adjacent to ranges where fires are expected, the management of pines may help produce savannah-like conditions preferred by quail.

8.8.1.1.2.3.4 MAINTAIN OPEN AREAS

Since bobwhite populations require early successional vegetation, it is important to maintain open habitat. Emphasis must be placed on establishing plantings that support training and benefit wildlife.

8.8.1.1.2.3.5 FESCUE CONTROL

Fescue must be eliminated from managed openings in the MTAs. Glyphosate applications are recommended.

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8.8.1.1.2.3.6 DISKING

In managed fields in or near the fire ecology zone, install disk strips in fall or early spring to serve as summer brood habitat.

8.8.1.1.2.3.7 POPULATION SURVEY

The VDGIF June whistle (call) count shall be conducted annually on the established FAPH survey route. In addition, a garrison-wide call count census shall be conducted in order to map which habitats at FAPH are occupied by calling birds and to monitor any increases or declines in occupied habitat.

8.8.1.1.2.3.8 PREDATOR CONTROL

Consideration should be given to the trapping of mammalian predators from the fire ecology zone in an attempt to enhance nesting success.

8.8.2 MOURNING DOVE.

The mourning dove (*Zenaida macroura*) is a common resident species at FAPH. Besides being an important component of the avian community, the dove is an important game bird in Virginia and provides recreational hunting opportunities. FAPH's dove populations have dropped in the last two decades.

Mourning doves nest in a variety of habitats but are generally associated with forest edges and disturbed areas. Courtship activities have been observed at FAPH from February through September. Clutch sizes range from 1 to 3 eggs, with 2 being the average. The incubation period averages 14 days, and parents share incubation responsibilities. Doves can raise multiple broods during a breeding season. Mourning doves leave breeding habitats and begin their fall migration with the onset of fall weather around the first week of September. At FAPH, flocks of mourning doves form around small grain fields beginning in August. Doves use these grain fields intensively for feeding until early September, at which time dove numbers rapidly decline due to migration.

8.8.2.1 MANAGEMENT PRACTICES

Because early successional habitats are the most productive dove areas, the overall acreage of improved, semi-improved and early successional forestland will have the strongest positive influence upon the mourning dove population.

Agricultural fields are important because they furnish doves with a reliable source of food. At FAPH, most agricultural fields are multiple-use facilities serving as landing zones, drop zones, bivouac areas, or mechanized training sites. Most cultivation needs to be restricted to crops that

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have a low growth height so that visibility for military training is not impaired. Also, FAPH soils are generally acidic, infertile, and highly erodible, making corn production dependent upon above average rainfall and difficult during a drought. Past experience has shown that small grains, such as wheat and millet, rotated with soil enriching legumes such as ladino clover, help to maintain the fertility and stability of FAPH soils and provide some summer grain attractive for doves. Sunflower and corn are preferred by doves but are more difficult to grow, corn because of drought, sunflower because of losses to deer predation.

Although mourning doves rely on trees for nesting and roosting habitat, forest and woodland interiors are not heavily utilized. Large tracts of undisturbed forest are not attractive to doves. Silvicultural practices that open up the forest and result in the creation of substantial amounts of edge will improve mourning dove habitat conditions significantly.
Since mourning doves are migratory, harvest management guidelines are developed and implemented on a flyway-wide basis. The USFWS is responsible for establishing flyway harvest quotas. State wildlife agencies are then permitted to enact specific harvest recommendations for their respective states so long as daily bag limits do not exceed those established by the federal government. FAPH will plan to implement the dove hunting seasons established by VDGIF.

Historically, the Pender Camp area has proven to be excellent dove habitat and provided outstanding hunting opportunities. It is planned that these larger fields will be included in the spring planting program in future years with the coordination of the training units and, thus, once again provide beneficial habitat for the dove.

8.8.2.2 MANAGEMENT RECOMMENDATIONS

Virtually all of the management practices recommended for bobwhite quail habitat will also benefit mourning doves and therefore will not be restated (See section 8.8.1.1.2.3).

8.8.3 AMERICAN WOODCOCK.

The American woodcock (*Scolopax minor*) is a popular upland game bird found in early successional forests throughout the Garrison. FAPH is located within both the wintering range and the principal breeding range of the woodcock. Although woodcock populations along the Atlantic coast have been declining during the last two decades based on USFWS estimates, woodcock are relatively abundant at FAPH during the fall migration. Management objectives at FAPH are to maintain breeding and wintering habitat in support of regional population recovery objectives and to sustain opportunities for recreational hunting per USFWS/VDGIF guidelines.

8.8.3.1 HABITAT REQUIREMENTS

Woodcock are closely associated with young, second-growth hardwoods but need a diversity of forested, shrubby, and open habitats to satisfy their life requirements. Male woodcock establish breeding territories (referred to as singing grounds) in relatively open fields containing scattered

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brush, small trees, or shrubs. Courtship flights have been observed in forest clearings, pastures, cultivated fields, young pine plantations, and other open sites.

8.8.4 GRAY SQUIRREL

The gray squirrel (*Sciurus carolinensis*) is a popular game species that can be very abundant in the oak/hickory forests found at FAPH following years of good mast production. Bottomland hardwoods, upland hardwoods, and upland mixed pine hardwood forests provide the best habitat components for gray squirrels. Squirrels make heavy use of pine seeds during years of oak mast shortage; therefore, mature cone-producing pine stands may also be important to squirrels, particularly in years when acorn production is poor. Management objectives are to maintain adequate acreage of mature mast producing trees that provide food and denning resources for squirrels.

8.8.4.1 POPULATION DENSITIES

Gray squirrel populations may exhibit significant fluctuations from year to year, but they are not considered cyclic. Fluctuations are generally correlated with the availability of hard mast food supplies during the preceding fall. Fall-to-fall densities have been observed to double or even quadruple in response to bumper crops of mast, and they have been observed to plummet to population levels of 15% to 25% of the previous fall density in response to mast crop failures.

8.8.4.2 FOOD

Table 8-7 shows primary and supplemental food items for gray squirrels based on several studies. Although population levels are closely tied to the availability of hard mast, supplemental foods are often heavily utilized when available. The hard mast production capability of a timber stand is the key that determines a stand's ability to support gray squirrels. Research showed that a hard mast production rate of 100 lb/acre would be sufficient to support 0.3 to 0.5 squirrels/acre when the needs of other game and nongame species were considered. Research estimated that a higher

Table 8-7. Primary and Supplemental Food for Gray Squirrels

Primary Plant Foods	
Hickories (*Carya* spp.)	Yellow poplar (*Liriodendron tulipifera*)
Oaks (*Quercus* spp.)	American beech (*Fagus grandifolia*)
Maples (*Acer* spp.)	Flowering dogwood (*Cornus florida*)
Blackgum (*Nyssa sylvatica*)	Black walnut (*Juglans nigra*)
Supplemental Foods	
American hornbeam (*Carpinus caroliniana*)	
Ash (*Fraxinus* spp.)	Hazelnut (*Corylus americana*)
Supplemental Foods	
Blackberry (*Rubus* spp.)	Black cherry (*Prunus serotina*)
Blueberries (*Vaccinium* spp.)	Persimmon (*Diospyros virginiana*)
Pine (*Pinus* spp.)	Sweetgum (*Liquidambar styraciflua*)
Sycamore (*Platanus occidentalis*)	Chinquapin (*Castanea pumila*)
Grapes (*Vitis* spp.)	Greenbrier (*Smilax* spp.)

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rate of 130 lb of hard mast/acre was the minimum production required to support densities of 1 squirrel/acre and, if possible, hard mast production should exceed 150 lb/acre. If 150 pounds of acorns per acre is considered quality squirrel habitat (>= 1 squirrel per acre), then it appears that FAPH hardwood forests can be predicted to reach that level of production at between 50-60 years of age. Mixed pine-hardwood stands can be predicted to reach that production level at about 70 years.

8.8.4.3 NEST SITES

A reasonable management goal for nest sites is 2.4 to 3.2 sound dens/acre, but up to 6 sound dens/acre may be practical in stands with high hard mast production. A variety of tree species should be retained in each stand, as different species decay and develop dens at varying rates. Sound dens may take from 8 to 10 years to form and may have useful lives of 10 to 20 years.

8.8.4.4 TIMBER MANAGEMENT

Stands of oaks and hickories may be thinned periodically to promote crown vigor, thus improving mast production potential. Small selection cuts (without cull tree removal) that create openings of 0.25 to 1.0 acre are less disruptive to squirrel populations than are clearcuts. During these selection cuts, a stocking rate of 15 to 20 oaks of 10+ in. DBH and 15 to 20 similarly sized hickories (6 to 8 trees/acre of each genus) should be retained to provide enough mast to maintain fall densities of approximately 1 squirrel/acre. Approximately 2 to 3 trees/acre with suitable den cavities, including some large-diameter den trees (23.6+ in. DBH), should be retained for shelter.

Clearcut stands should be kept small (<20 acres) and 40% to 60% of the management unit should be retained in stands with trees of mast-producing age. Management units should be regenerated in a pattern where young stands (20 to 25 years old) are not contiguous to each other. Research suggests that 8 to 10 suppressed hickory poles per acre (3 to 6 in. DBH) be left standing in clear-cuts. Although some of these trees will die, some should live and reach seed-bearing size, thus improving the habitat for squirrels as the stand matures. A number of healthy understory trees that produce supplementary squirrel foods should also be retained in clearcuts; a minimum basal area of approximately 2 to 3 sq ft/acre is recommended.

For further explanation of timber management at FAPH, see Chapter 7 of this INRMP and Appendix F.

8.8.4.5 HABITAT RESOURCES AT FAPH

Hardwood and mixed pine-hardwood forests throughout FAPH provide quality squirrel habitat. It is predicted that at 40 years of age, these forests begin to provide enough hard mast and denning sites to support gray squirrel populations. Hardwood habitats that are > 70 years of age are considered high quality squirrel habitats.

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8.8.4.6 MANAGEMENT RECOMMENDATIONS

No specific actions for squirrel management are required. FAPH will continue monitoring acorn production using the standardized acorn production count that is currently in use.

8.8.5 COTTONTAIL RABBIT

The eastern cottontail (*Sylvilagus floridanus*) is an important mammal, serving as an important prey species to wild raptors and carnivores and also as a significant game species in Virginia. The eastern cottontail occurs throughout the eastern half of North America, where it occupies agricultural habitats and other early to mid-successional plant communities. Management objectives are to manage vegetative communities to improve habitat and maintain the cottontail population.

8.8.5.1 HISTORICAL DATA

Rabbits, along with quail, have declined at FAPH over the past 30 years, although rabbit populations currently seem much more viable than the quail populations. Harvest data indicate an abrupt population decline during the 1970's. Roadside count surveys, winter track counts, and incidental observations by installation personnel also indicate poor rabbit populations. It should be noted that cottontail harvest trends are almost identical to those for bobwhites. This similarity may indicate that whatever is responsible for the FAPH quail decline is also responsible for the rabbit decline. Habitat deterioration due to aging forests, succession of old field habitats into forested habitats, and planting of tall fescue in training areas may have contributed to habitat decline. It is likely that other factors are also involved in the rabbit/quail decline and may involve disease and increased predation. Most likely, all of these factors have combined to prevent rabbit populations from rebounding to previous high levels.

8.8.5.2 CENSUS TECHNIQUES

At FAPH, roadside counts have been done in conjunction with annual quail call counts. The technique consists of driving predetermined routes in the evening or early morning and counting rabbits. The roadside count made at FAPH is done in conjunction with the annual quail call count and is only conducted one morning, resulting in a very small sample size of rabbits observed.

8.8.5.3 HABITAT MANAGEMENT

Because cottontail habitat requirements are so similar to those of bobwhites, active quail management will likely benefit resident cottontail populations as well. Rabbits require an interspersion of both early and mid-successional habitat. Rabbits need horizontal cover of woody vegetation and vines to help protect them from predators. Young forests may be made more attractive to cottontails by maintaining strips of dense shrubs and vines, such as blackberries, at

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intervals throughout the plantation. Networks of these strips may function as corridors, connecting pine plantations with more superior habitats. Prescribed burning can help to retain pockets of grass and seedlings within pine plantations.

Many of the same management practices used to improve idle areas for bobwhite production will also maintain or improve idle areas for cottontails. Late-winter or early-spring prescribed burns, shrub plantings, brush-pile establishment, and strategically placed disked strips will result in habitat conditions favored by both bobwhites and cottontails. Though both rabbits and quail rely heavily on dense woody vegetation for escape and thermal cover during winter, rabbits are probably more dependent on woody vegetation because shrubs and vines often make up the bulk of a cottontail's winter diet.

Extensive mowing operations, performed during inappropriate seasons, can have deleterious effects on rabbit populations. Where cottontails are a central management concern, mowing should be conducted on small parcels of land after the breeding season during late summer and early fall. An ideal habitat management scenario would involve harvesting strips of vegetation from a managed opening rather than an entire removal operation. Mowed strips should be located adjacent to dense brush so that rabbits have escape cover, foraging habitat (mowed strip), and nesting habitat (unmowed strip) all in proximity to one another.

8.8.5.4 MANAGEMENT RECOMMENDATIONS

The following strategies are recommended for cottontail rabbit management:

a. A fire-ecology regime holds the most promise for rebuilding quality quail and rabbit habitat.

b. Ensure that all planting done in conjunction with construction and range maintenance activities in these training areas utilize warm season grasses, small grains and legumes that support quail/rabbit habitat.

c. When compatible with other land management purposes, use strip mowing as opposed to total mowing to diversify habitat within fields.

d. Diversify forest clearcut units by breaking up large pine plantations with hedgerows. Rather than piling slash into piles for burning, the slash may be pushed into hedgerows that could remain unplanted; besides providing immediate escape cover, vegetative growth along the hedgerows would naturally succeed through species such as pokeberry, blackberry, sumac, honeysuckle, and then woody saplings. This transition would serve to maintain more diversity within the clearcut.

e. Eliminate or control tall fescue (Kentucky 31) in these training areas through glyphosate application and cultural treatments.

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f. The scientific study of predator-prey relations and efficacy of predator controls should be done to evaluate if mammalian predator control could contribute to the recovery of small game species.

8.9 FURBEARER MANAGEMENT

8.9.1 MANAGEMENT GOALS

The beaver (*Castor canadensis*), raccoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), river otter (*Lutra canadensis*), mink (*Mustela vison*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), coyote (Canis latrans), and opossum (*Didelphis marsupialis*) are the primary furbearing species found at FAPH. The coyote is only a recent arrival, becoming common in the early 2010s. Although these species historically were trapped for their fur, their economic significance and recreational importance has diminished in recent years due to the decline in the fur market. These species have ecological significance as natural predators, disease vectors, and in the case of beavers, as vegetation and water level managers. Water impounded by their actions can increase wetland area and improve habitat for waterfowl and other wetland wildlife; on the other hand, clogged culverts can result in road flooding and costly repair and maintenance work. Some of the species, such as raccoons, skunks, and foxes are implicated for predation on nests and young of songbirds and game species. The goal of furbearer management is to sustain predators at levels that do not imperil other declining species and to diminish the risk of disease outbreaks and damage complaints.

8.9.2 LIFE HISTORIES

8.9.2.1 BEAVER

The beaver occupies slow-moving freshwater habitats and is found throughout FAPH wherever reliable water supplies are found. Females produce 1 litter of 3 to 4 kits per year. The kits are incorporated into the family unit, which typically includes the adult pair and siblings from the previous year's litter. This family unit is generally called a "colony." The average number of individuals in a family group in the United States is 5.2. Densities have been reported to range from 0.8 families/miles of stream in New York to 1.2 families/mile of stream in Alabama.

The beavers' diet is largely composed of vegetation that grows on moist soils. Woody vegetation is a vital component of beaver habitat. Trees and shrubs are not only important dietary items, but are essential materials for dam and lodge construction. Woody plants are especially important during winter when herbaceous food availability is limited. Tree and shrub limbs are cut and stockpiled in underwater "caches" to provide winter food. Beavers consume the leaves, twigs and bark of woody vegetation but display preferences for certain species and size-classes. At FAPH, yellow poplar (*Liriodendron tulipifera)*, and sweet gum (*Liquidambar styraciflua*) are important food species, but almost all trees species near water are used. Herbaceous plants favored by

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beavers include evergreen Christmas fern (*Polystichum acrostichoides*), sedges (*Carex* spp.), duck potato (*Sagittaria* spp.), pondweed (*Potamogeton* spp.), and water lily rhizomes (*Nymphaea* spp.). Beavers usually exploit food closest to the water first and then range farther as this supply is depleted.

8.9.2.2 RACCOON

The raccoon is one of the most ecologically tolerant furbearers in terms of its habitat requirements. Raccoons are found throughout FAPH. Raccoon breeding season extends from late winter to early spring. February is generally considered to be the month of peak activity. The average litter size is 3.

Raccoons consume a tremendous variety of foods, including meat carrion, garbage, birds, mammals, a host of plant species, and almost any food prepared for human or animal consumption. Hard and soft mast are foods of choice. Agricultural crops, especially corn, can be of local importance. Since raccoons are closely associated with water, aquatic vertebrates and invertebrates comprise a significant portion of their diet. Raccoons display a marked preference for crayfish. Frogs, turtles, snakes and their eggs, fish, and mollusks are common food items. Insects, particularly beetles and grasshoppers, are also common foods. Raccoons are adept at locating and consuming waterfowl nests.

8.9.2.3 FOXES

Red and gray foxes are both common species at FAPH. Throughout much of their range, they display distinct habitat preferences. Grays favor deciduous woodland habitats while reds are more commonly linked with agricultural lands. Although there are few agricultural lands at FAPH, red foxes are found throughout the Installation, even in training areas with little open land. Yearling females of both fox species are capable of producing a litter annually. Breeding takes place in December through March among red foxes and January through April in grays. The average litter size is 5 pups for red foxes and 4 pups for grays. In both cases pups remain with their parents until the fall of their first year.

Both red and gray foxes are highly susceptible to rabies. At FAPH, red foxes are frequently infected with sarcoptic mange, caused by the mite, *Sarcoptes scabiei*. Infected animals become emaciated, lose hair, and their skin becomes crusty and flaky in appearance. This is the most common disease of red foxes and may cause significant mortality. Gray foxes are not susceptible to sarcoptic mange but are very susceptible to canine distemper, which causes significant mortality in grays.

Red and gray foxes are opportunistic, non-specific predators in that they eat a broad array of foods. Small mammals, birds, reptiles, amphibians, and their respective eggs are readily consumed by both fox species. Insects, especially grasshoppers and crickets, often make up a substantial part of the spring and summer diets of foxes. In addition to live animals, foxes will

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readily consume both wild and domestic carrion when available. Research showed that white-tailed deer and livestock carrion were of local importance to red fox populations during winter. Generally, both species prefer deciduous fruits such as apples (*Malus* spp.), pears (*Pyrus* spp.), persimmons (*Diospyros virginiana*), blackberries, and grapes. Acorns, grasses, sedges, and domestic grain crops are consumed when available.

8.9.2.4 MINK

Mink reside in an assortment of wetland habitats including freshwater and saltwater marshes and along streams, rivers, and lakes. Shoreline areas with adequate concealment cover are preferred.

8.9.2.5 RIVER OTTER

Historically, river otters occupied aquatic ecosystems across North America. Victims of habitat degradation, over harvest and human encroachment, otter populations declined or were extirpated in some regions. The river otter is found at FAPH in scattered locations at beaver ponds and reservoirs.

Upon reaching sexual maturity at 2 years of age, otters mate in late winter or early spring. The average litter consists of 2 or 3 blind, helpless pups. The pups will be weaned at 3 months of age and become self-sufficient in 5 to 6 months. The female and her offspring usually remain together for 7 or 8 months or until the birth of a new litter is imminent.

Fish are the mainstay of the otter diet, though a variety of aquatic vertebrates and invertebrates, birds, and mammals is opportunistically consumed.

8.9.2.6 MUSKRAT

Muskrats require a permanent water supply. They can be common in lakes but otherwise are relatively uncommon at FAPH. Like beavers, muskrats are largely herbivorous. Muskrats consume a vast array of wetland vegetation. Cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.) are preferred items, often constituting up to 80% of the animal's diet. Other common food items include duck potato, water lily, sedges, willow sprouts, pickerelweed (*Pontederia* spp.), and wild rice (*Zizania aquatica*).

8.9.2.7 COYOTE

Coyotes have just become established at FAPH. They are not native in the eastern United States. In some cases the coyote has been moved east to offer added hound hunting opportunities. Research revealed that coyotes migrated east and hybridized with northern wolves and the coyotes occupying the east now have evolved into a larger form thus changing from the smaller western rodent preying coyote of the west to a larger stronger deer predator of the eastern forest. They are known for their adaptability and have been found in a wide range of habitat. Average

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litter size is six. Food habits are diversified but deer, fruit, insects, rodents, songbirds, woodchucks, rabbits, carrion, and domestic animals (including pets) have all been recorded in the coyote diet. Coyotes compete for space and prey on other predators, and in so doing may, actually reduce foxes, raccoons, skunks, and feral cats.

8.9.2.7.1 CENSUS TECHNIQUES

Carnivores are particularly difficult to census because they are elusive and highly mobile. The majority of techniques used to census furbearers result in an index rather than a true population estimate.

Harvest Indices: Harvest reports from licensed trappers can be used to obtain insights into general population trends for many furbearers. Because variables independent of population density such as pelt prices, trapper numbers, and trapper effort can influence the harvest of some species, harvest data must be used cautiously. Currently, the decline of active trapping has resulted in reduced availability of harvest data.

Sign Counts: This method simply entails counting tracks, droppings, or dens. Often, results are most useful in determining the presence or distribution of a species, not actual numbers. Because beaver signs such as feeding areas, dams, and lodge building are so obvious and easy to detect, survey crews can locate these activities in the field and mark maps to record the locations of beaver colonies. New technologies are allowing the use of DNA markers in droppings to be used for population sampling.

Calls: Research has shown that predator calling was as effective as scent stations in eliciting responses from red and gray foxes in various habitats in Alabama. They recommended that predator calling be further investigated as a potential means of indexing populations of certain species in the Southeast. Some biologists use coyote howling to elicit responses from territorial animals during breeding season.

Scent Station Surveys: FAPH conducts scent station surveys along established routes every two years to obtain an index of abundance of foxes and other furbearers. The relationship between population density and the rate of visitation at scent stations will vary from survey to survey due to a number of factors. The scent station technique is best suited to inventorying the predominately carnivorous furbearers.

8.9.3 HISTORICAL DATA

8.9.3.1 BEAVER POPULATION

The FAPH beaver population has not been formally measured, and the need for such a study is great. Based on observations and numbers from nearby DOD installations it is believed there are over 150 beaver colonies on FAPH. Beaver colonies move when they exhaust food supplies in

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one location, so exact colony locations shift over time. Based on an average of 5.2 beavers per colony site, the FAPH population is estimated at over 780 animals.

Based on local surveys about one-half of the colonies have typical mud and stick lodges; the other colonies maintain bank lodges. Many dams are placed within stream channels, and although water is impounded, the water is retained within the stream banks. In excess of 100 ponds have been impounded beyond the banks of the stream.

Beavers have modified many of the deciduous forested wetlands on the Garrison. Through the process of tree cutting, damming, and flooding, occupied beaver sites are transformed from heavily forested riparian woodlands to open wetlands. At most older beaver sites, wetland communities classified as palustrine scrub-shrub, palustrine emergent, and palustrine open water have been created. These beaver-created habitats are significant habitats for many wetland species of wildlife, including mink, otter, raccoon, herons, waterfowl, woodcock and numerous amphibians and reptiles. Beaver cuttings have significantly thinned some woodland around active colony sites, resulting in stimulated sprouting and understory development beneficial to woodcock, ruffed grouse and other species that require dense shrub habitat.

8.9.3.2 FOXES

Scent Station Surveys. Scent station surveys were conducted 2 times at FAPH from 2009 to 2010. Observers had difficulty distinguishing between red and gray fox tracks, so those values were grouped into total fox tracks.

8.9.4 MANAGEMENT PRACTICES

Furbearers generally benefit from management practices designed to improve the diversity of forests, openings, and wetland areas.

8.9.4.1 WETLANDS

Many of the basic habitat requirements of the raccoon, muskrat, river otter, and mink are provided by wetlands modified by beavers; therefore, the maintenance of a beaver population is beneficial for these furbearing species. Crayfish, frogs, fish, and other aquatic fauna in the beaver ponds provide forage for raccoons and river otters.

8.9.4.2 TIMBER MANAGEMENT

Management of forests should encourage a mixture of timber age classes distributed in such a way as to maximize diversity. Small, irregularly shaped clearcuts amplify edge effect and create openings that may become conducive to red foxes as well. Hard and soft mast producing species

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should be encouraged as they provide food for both fox species and raccoons. The retention of cavity trees, particularly in riparian zones, is recommended to provide dens for raccoons and opossums. Refer to Chapter 7 of this INRMP for further information on the forest management practices at FAPH.

8.9.4.3 MANAGED OPENINGS AND PRESCRIBED BURNING

Prescribed burning in forested areas will benefit furbearers by stimulating the growth of herbaceous species that support a prey base of small rodents.

8.9.4.4 BRUSH PILES

Brush piles provide denning and thermal escape cover for terrestrial furbearers. Slash left from logging practices can be piled into mounds to provide shelter.

8.9.4.5 HARVEST MANAGEMENT

Monitoring of harvest levels should be conducted to maintain baseline information about the presence and condition of species. Enthusiasm about commercial trapping is not expected to resume unless there is a dramatic increase in fur prices.

8.9.4.6 NUISANCE ANIMALS

FAPH's IPMP (Appendix J) addresses the practices for conducting nuisance animal control. Nuisance beavers pose a particular challenge since they are beneficial to a variety of wildlife species but can also cause significant impacts to infrastructure from obstructing culverts and flooding roadways. The VDGIF does not list beavers as a nuisance species but the clogging of culverts and flooding of roads is a great and costly challenge to training and maintenance. Control measures range from installing water regulatory devices to permanent removal of the dam and the beavers that built it. The installation of a PVC drain pipe is a non-lethal option that allows the beavers to remain but eliminates the flooding problems caused by their impoundments. In areas where this compromise is impractical, breaking the dam and trapping the beavers will be required. Beavers at FAPH have also caused significant impacts to some of the Post's listed threatened swamp pink and small whorled pogonia colonies. Refer to Chapter 9 of this INRMP further information regarding these plant species.

8.9.5 MANAGEMENT RECOMMENDATIONS

8.9.5.1 ECOLOGY

Studies of furbearer ecology to include population densities, home range size, impacts on ground nesting birds, and disease transmission should be ongoing.

8.9.5.2 PERMIT TRAPPING

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The FAPH trapping program shall continue to be administered by the regulations, (Appendix G) and records should be kept of any furbearers taken under this program.

8.9.5.3 BEAVER SURVEY

Beaver population levels should be monitored at 4-year intervals using the sign count procedure. Resulting polygons of colony locations should be entered into the FAPH GIS to provide a historical record of beaver colonization over time.

8.9.5.4 HABITAT

Implementation of the habitat recommendations in this Chapter should sustain adequate habitat for terrestrial furbearers. The beaver population will maintain a variety of wetland habitats for aquatic furbearers.

8.9.5.5 CULVERTS

The installation of perforated double cylinder beaver culverts in some dams may be used on a limited basis as a means to control water levels in some problem areas. Alternatively, roadway culverts may be designed or fitted with devices that allow water through but provide a physical barrier preventing the damming of materials by beavers.

8.9.5.6 POPULATION CONTROLS

The dire circumstances of bobwhite quail and other ground nesting wildlife and impacts to the deer populations may warrant control of mammalian predators.

8.10 NON-GAME MANAGEMENT

8.10.1 MANAGEMENT PRACTICES

Most species native to FAPH area are not pursued for harvest under regulations governing the take of sport fishes, game animals, and furbearers, and are known as nongame species. Ecosystem management has been prescribed by DOD as the means to perpetuate all of the component parts of the biological community. The VDGIF has completed a Virginia Wildlife Action Plan which identifies the wildlife species in the Commonwealth having the greatest conservation need. FAPH will strive, to the extent practical within the military training environment, to implement land management programs that will maintain the habitat diversity required to perpetuate these species. Nongame species at FAPH occupy habitats ranging from early successional old fields to mature forest stands and various wetlands and streams. Consequently, land management at the Post must perpetuate a diversity of plant communities. This will include maintaining designated stands of mature forest, maintaining intermediate forest age classes ranging from 0 to 100+ years of age,

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establishing protected buffer strips in riparian habitats, maintaining wetlands, reestablishing native vegetation in previously disturbed areas, and using fire or other disturbances to maintain grassland communities. It is believed that if the species requiring the extreme habitats, i.e., fire-maintained grassland and old growth timber, are adequately supported by the land management practices used at the Post, then the more generalized species, adaptable to a wider range of vegetation conditions, will also be supported. Initiatives under the Chesapeake Bay Program to protect water quality will help maintain biological diversity in wetlands and streams. Artificial techniques, such as installing nest boxes, may be used to improve habitat for some species, but the management emphasis will be on providing natural cavities.

8.10.2 NONGAME SPECIES

8.10.2.1 BIRDS

A Checklist of Birds for FAPH is provided at Appendix C. This checklist was compiled from observations made by FAPH biologists and checklists from nearby refuges and Military Installations. The checklist was also edited by wildlife staff to include their recent observations about species abundance.

Common woodland species include the blue jay (*Cyanocitta cristata*), Carolina chickadee (*Parus carolinensis*), tufted titmouse (*P. bicolor*), red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), Carolina wren (*Thryothorus ludovicianus*), wood thrush (*Hylocichla mustelina*), and red-eyed vireo (*Vireo olivaceous*). Species found in openings and edge habitats include the mockingbird (*Mimus polyglottos*), brown thrasher (*Toxostoma rufum*), eastern bluebird (*Sialia sialis*), American crow (*Corvus brachyrhynchos*), indigo bunting (*Passerina cyanea*), prairie warbler (*Dendroica discolor*), song sparrow (*Melospiza melodia*), yellow-breasted chat (*Icteria virens*), and white-throated sparrow (*Zonotrichia albicolis*). The wood thrush, red-eyed vireo, indigo bunting, prairie warbler, and yellow-breasted chat are among the neotropical migratory bird species that breed at FAPH. Populations of many of these migratory species appear to be declining and, therefore, are the subject of a nationwide conservation program, "Partners in Flight."

Common wetland and aquatic species include the great-blue heron (*Ardea herodias*), green heron (*Butoroides striatus*), belted kingfisher (*Megaceryle alcyon*), and a variety of waterfowl.

The most common birds of prey observed or heard at FAPH include the bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*B. lineatus*), broad-winged hawk (*B. platypterus*), sharp-shinned hawk (*Accipiter striatus*), American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), black vulture (*Coragyps atratus*), barred owl (*Strix varia*), and great horned owl (*Bubo virginianus*).

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8.10.2.2 MAMMALS

A listing of mammals found at FAPH is shown in Appendix C. Common small mammals include the eastern mole (*Scalopus aquaticus*), least shrew (*Cryptotis parva*), northern short-tailed shrew (*Blarina brevicauda),* eastern chipmunk (*Tamias striatus*), white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pennsylvanicus)* and woodland voles *(Microtus pinetorum).*

8.10.2.2.1 BATS

FAPH supports a diversity of habitat types, riparian areas, and riparian corridors that offer high quality habitat to a variety of bat species. Prior to 2009, nine species of bats were known to occur on FAPH (Table 8-8). Several of these cave-hibernating species common in Virginia were either seasonal migrants or summer residents of FAPH prior to the detection of White-nose Syndrome (WNS) in Virginia (c. 2009). With the advent of WNS into Virginia, eastern cave-hibernating bats have experienced catastrophic declines. Surveys will continue to be conducted as necessary to monitor bat species presence and abundance on FAPH.

Table 8-8. Bat Species Observed on FAPH (pre-WNS)

Common Name	Scientific Name	Hibernation
Big brown bat	*Eptesicus fuscus*	Cave
Northern long-eared bat	*Myotis septentrionalis*	Cave
Eastern pipistrelles	*Pipistrellus subflavus*	Cave
Little brown bat	*Myotislucifugus*	Cave
Silver-haired bat	*Lasionycteris noctivagans*	Tree
Southeastern myotis	*Myotis austroriparius*	Tree
Evening bats	*Nycticeius humeralis*	Tree
Red bats	*Lasiurus borealis*	Tree
Hoary Bat	*Lasiurus cinereus*	Tree

8.10.2.3 REPTILES AND AMPHIBIANS

FAPH's community assemblages provide abundant habitat for a diversity of reptile and amphibian species (Appendix C). Common species include the box turtle (*Terrapene carolina carolina*), red-bellied cooter (*Pseudemys rubriventris*), snapping turtle (*Chelydra serpentina serpentina*), five-line skink (*Eumeces fasciatus*), northern fence-lizard (*Sceloporus undulatus hyacinthinus*), bull frog (*Rana catesbeiana*), cricket frog (*Acris crepitans*), and the cope's grey tree frog (*Hyla chrysoscelis*). A listing of amphibians and reptiles found at FAPH is shown at Appendix C.

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Reptile and amphibian studies previously conducted included surveys of frogs, ecology of the spotted salamander (*Ambystoma maculatum*), marbled salamander (*Ambystoma opacum*) and the northern green frog (*Rana clamitas melanota*). The University of Richmond (UR) is currently conducting an ongoing planning level survey with a concentration on vernal pools at FAPH. FAPH offers a diversity of high quality habitats to a variety of amphibian and reptile species. Amphibian species are in decline globally and represent a group of species warranting additional research and monitoring. The F&W branch recognizes the diversity of habitat and the importance of amphibians and reptile species and will look to expand research opportunities in the future.

8.10.2.4 FISH

See section 8.2.1 (Fisheries Management)

8.10.2.5 INVERTEBRATES

Several studies have documented the abundance and diversity of invertebrate species on FAPH (Appendix C). Though typically not managed directly, habitat management and biodiversity conservation for other resources directly benefit invertebrate species.

8.10.2.5.1 POLLINATORS

The conservation and habitat management of honey bees has garnered much attention in recent years due to population declines. FAPH manages several small areas explicitly for pollinator conservation and pollinator-friendly plant species are selected for landscaping application where feasible. Additionally, portions of fields managed specifically for wildlife purposes are left fallow to allow native species to seed in and develop.

8.10.2.5.2 MONARCH BUTTERFLY

The conservation of the Monarch butterfly (*Danaus plexippus*) has become a concern in recent years due to observed population declines associated with habitat loss across three continents. Monarch butterflies are seasonal (late summer) migrants to FAPH that may be casually observed. Several species of milkweed (*Asclepias*), the primary staple forage for Monarchs, are present in abundance on FAPH within open areas and along road shoulders. FAPH is in the process of mapping the distribution of large milkweed occurrences as part of its pollinator / monarch conservation strategy.

8.11 MULTI-SPECIES HABITAT REQUIREMENTS

It is not necessary to identify a habitat management program for every species. Rather, it is appropriate to develop habitat management programs that meet the requirements of groups of

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species that have similar life requisites. For the purposes of this plan, the following groups have been identified: cavity nesting birds, neotropical migratory birds, grassland and forest edge birds, amphibians, small mammals, lepidoptera, and aquatic invertebrates. Within these groups are species that rely on the extreme of habitats found at FAPH: stream corridors, grasslands, forest edges, and mature closed canopy forests.

8.11.1 SPECIES GROUPS AND HABITAT REQUIREMENTS

8.11.1.1 CAVITY NESTING BIRDS

Woodpeckers, nuthatches, chickadees, bluebirds, kestrels, barred owls, and bats are a few examples of species that require nesting cavities to satisfy their life requisites. Bluebirds and kestrels are found on the edges of open habitats. Small birds such as nuthatches and chickadees can find cavities in a variety of intermediate aged forest habitats. The pileated woodpecker and barred owl, however, are large birds that require expansive forested areas that contain large trees that provide cavities suitable for security and reproduction. In all probability, if the habitat requirements of the pileated woodpecker and barred owl are met, the life requisites of other woodland cavity-nesting species will also be met.

Nesting boxes for the eastern bluebird and kestrel have been installed along forest edge and grassland habitats. The nesting box success has been monitored by F&W Branch staff. Boxes have been repaired or removed as required. The use by kestrels has been very minimal, indicating a surplus of natural cavities. Bluebird use and nesting success has been very high.

8.11.1.2 NEOTROPICAL MIGRATORY BIRDS

Neotropical migratory birds breed in North America and migrate to Central and South America to overwinter. Population indices for many of these species have declined in recent years, focusing national attention on the status of these species. Neotropical migratory bird routes were established in 2011. These routes utilize call identification to record all species heard on the routes to establish usage by migrating or nesting neotropical birds.

The wood thrush, scarlet tanager, and red-eyed vireo are common neotropical migrants found in mature FAPH woodlands. Much research is ongoing nationwide to determine the factors affecting the population densities and breeding success of these species.

8.11.1.3 GRASSLAND AND FOREST EDGE BIRDS

Some year-round resident and migratory bird species use open grassland and woodland edges. Among the nongame birds utilizing these habitats are the eastern bluebird, American robin (*Turdus migratorius*), cardinal, indigo bunting (*Passerina cyanea*), yellow-breasted chat, prairie warbler, eastern phoebe (*Sayornis phoebe*), and song sparrow. Native grasses and shrubs should be encouraged along edges, and the openings should contain structural features such as downed

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logs and perch sites. Forest openings created by clearcuts are usually colonized by native grasses prior to canopy closure. Therefore, carefully planned timber harvesting operations can be supportive of non-game birds that require early successional habitats. It is important that timber harvests are planned and scheduled over time so that adequate mature timber is retained to meet the requirements of the larger cavity-nesting species but that some cutover habitat exists to support early successional species. Fire maintained landscapes at FAPH support a diverse assemblage of bird species as documented in research.

8.11.1.4 WETLAND SPECIES

The diversity of wetland habitats present at FAPH provide habitat for a variety of nongame species. Amphibians have recently received considerable media and scientific attention because of species extinctions and population declines worldwide. Because amphibians rely on shallow wetlands for the reproductive portion of their life cycle, their population status should closely relate to the quality and availability of wetland habitats.

8.11.2 MANAGEMENT RECOMMENDATIONS

8.11.2.1 FOREST LANDSCAPES

Recent studies suggest that in extensively forested areas, timber management, and maintenance of the native breeding forest songbird community can be compatible. On their study area, 50% of the area was in forest reserve not under active timber management. The other 50% of forestland was under active timber management being harvested by clearcutting or shelterwood methods on an 80 year rotation. This practice provided large areas of mature timber but also provided seedling and edge habitat for species that required early successional habitats. Chapter 7 contains information on the management of the forestry resources on FAPH.

8.11.2.2 OPEN LANDSCAPES

Species adapted to open landscapes include the American kestrel, killdeer, kingbirds, purple martin, barn swallow, meadowlarks, a variety of sparrows, and meadow voles. The promotion of native grasses in managed open fields and maintenance of transitional zones along forest edges is recommended. The prescription of fire in Section 2 along with other maintenance practices to increase the acreage of grasslands should be of benefit to these species.

8.11.2.3 EDGE HABITATS

Edges and their ecotones (the area influenced by the transition between plant communities) are frequently rich in wildlife, both in numbers of species and individuals, because of the additive effect created when two or more plant communities and structural conditions come together. The management of openings and even-aged forest management prescriptions will ensure that edge habitats are relatively abundant in land management the majority of the training areas where

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timber harvests are scheduled. Infrequent forest disturbances, insect disease, storms and fire may less predictably create edge habitats in the controlled access areas and range and impacts areas. Transitional landscapes offer the opportunities for habitat improvement in urban areas. Birds commonly attracted to wood margins, shrub thickets, and other edge habitats include doves, hummingbirds, wrens, mockingbirds, bluebirds, thrashers, cedar waxwings, orioles, cardinals, indigo buntings, and several species of warblers and sparrows. Many of these species nest in woodlands but feed heavily along edges because of the generally high production of seeds, fruits, and insects within this transition zone. VDGIF and the National Wildlife Federation can provide information about backyard habitat programs. This should be made available for schools and civic groups aboard the Garrison that would like to do conservation projects in the housing and developed areas.

8.11.2.4 RIPARIAN CORRIDORS

The control of non-point source pollution and maintenance of vegetated buffer strips along streams and other watercourses is essential for the maintenance of healthy amphibian populations and aquatic systems. These riparian zones are extremely beneficial to non-game wildlife and are also important for erosion control, bank stabilization, and maintaining water.

8.11.2.5 PESTICIDE USE

Because a variety of insects, including moths, butterflies, and benthic macroinvertebrates are important as pollinators and/or prey, caution must be exercised in the use of pesticides. These invertebrates are important in the food chains of aquatic and terrestrial vertebrates. The majority of forest-dwelling bird species are insectivorous and require a constant food supply to feed nestlings and store fat for migration; pesticides must be used judiciously so as not to eliminate their food supply. Refer to the FAPH Integrated Pest Management Plan in Appendix I.

8.11.2.6 NESTING STRUCTURES

Under natural conditions, cavities in live trees and snags usually provide preferred homes for cavity-nesting species. It is seldom practical to leave diseased trees standing where they can become a potential hazard in residential neighborhoods, or high-use recreation areas. Therefore, providing artificial nest structures may be the best way to encourage cavity-nesters in some environments. Nest boxes are recommended for greenspace management and their construction often lends itself to community projects undertaken by scouting groups and other civic organizations. Continuation of the bluebird nest box program is recommended.

8.11.2.7 RESEARCH AND SURVEYS

a. Short and long-term surveys should be supported to improve knowledge about nongame species distribution and response to land management actions.

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b. Support DOD programs by continuing support for studies involving ecology of neotropical migratory birds. Continue the neotropical migratory bird routes surveys performed in spring.

c. Evaluate the Virginia Wildlife Action Plan and identify species of greatest conservation concern that occur at FAPH. Develop monitoring programs for these species.

8.12 SUPPPORTING ACTIONS & PROJECTS

The following actions and projects have been identified for implementation to manage wildlife and fish species and their habitats on FAPH in accordance with all applicable federal and state laws, regulations, and directives, this INRMP, and the installation IPMP (Appendix I).

Table 8-9. FY16-20 INRMP Projects for Fish & Wildlife Management

FY	Project Name	Project Description	Funding Class
Annual FY 16-20	Maintain open area habitats	Maintain 1,000 acres of open areas to benefit military training and wildlife (e.g., mowing, planting, prescribed burning)	0
Annual FY 16-20	Open area program management	Maintain open areas inventory in GIS	0
Annual FY 16-20	Increase open area habitats	Convert 100 acres of forest to enhanced open areas to support military training and a diversify wildlife habitats	0
Annual FY 16-20	Non-game (Avian) Habitat Management	Establish and maintain 50 bluebird nest boxes along a delineated watchable wildlife route	2
Annual FY 16-20	Mast survey	Conduct annual acorn mast survey	1
Annual FY 16-20	Invasive plant control	In accordance with the IPMP, control tall fescue, autumn olive, wisteria, or other invasive plant species to benefit military open area training and wildlife	1
Annual FY 16-20	Impoundment management	Revise individual pond management and control angler regulations and fish stocking to achieve goals	0
Annual FY 16-20	Recreational User Satisfaction Survey	Collect information on the harvest of species and overall recreation experience satisfaction (via iSportsman)	0
Annual FY 16-20	Fisheries Management (1)	Monitor and control nuisance aquatic vegetation by biological, chemical and mechanical methods to avoid negative impacts on the fishery	1
Annual FY 16-20	Fisheries Management (2)	Monitor and where necessary, stock fish species to reach fishery management goals	1

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Table 8-9. FY16-20 INRMP Projects for Fish & Wildlife Management			
FY	**Project Name**	**Project Description**	**Funding Class**
Annual FY 16-20	iSportsman Maintenance	Maintain iSportsman system to sustainably manage the hunting, fishing, and trapping program (collection of biological data and usage reports)	0
Annual FY 16-20	Migratory bird nest boxes	Establish and maintain wood duck and prothonotary warbler nesting boxes along streams and ponds. Conduct annual monitoring of nesting box success	1
Annual FY 16-20	Nuisance resident goose management	Conduct nuisance resident goose management by trapping, relocating, annual monitoring, collection of movement data and possible removal	1
Annual FY 16-20	Bald eagle management	Locate bald eagle nests and monitor nest success	1
Annual FY 16-20	Turkey Surveys	Conduct spring gobbler surveys	1
Annual FY 16-20	Biological data collection	Collect deer, turkey, and bear data at the Game Checking Station and maintain electronic database to assess long-term population trends	1
Annual FY 16-20	Quail and rabbit surveys	Conduct quail/rabbit population surveys	1
Annual FY 16-20	White-tailed deer population surveys	White-tailed deer population surveys (trail cameras and snow track counts) to provide index of deer herd size	1
Annual FY 16-20	Furbearer Scent Station Survey	Operate 100 station routes annually to maintain index of mammalian predator populations	1
Annual FY 16-20	Migratory Breeding Bird Survey Routes	Conduct call and sight identification of birds on established routes to monitor species and abundance	1
Annual FY 16-20	Bat Monitoring	Conduct monitoring of bat populations (region-wide decline for many species)	1
Annual FY 16-20	Nuisance beaver control	Trap nuisance beavers causing flooding of threatened plant colonies	1
Annual FY 16-20	Bachmann's sparrow surveys	Conduct Bachman's sparrow search in historical incident area and similar suitable habitat	1
Annual FY 16-20	Public Outreach	Provide public education and outreach on fish and wildlife species and their desired habitats	0

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Table 8-9. FY16-20 INRMP Projects for Fish & Wildlife Management			
FY	**Project Name**	**Project Description**	**Funding Class**
Annual FY 16-20	Cooperative research	Promote cooperative research opportunities on FAPH with local Universities, state and federal agencies and NGOs. Purpose to study fish and wildlife and their associated habitats	0
Annual FY 16-20	Deer fawn capture	Conduct deer fawn capture and tagging to monitor survival, recruitment, emigration, and to establish known age jaws for baseline comparison for aging	1
Annual FY 16-20	Biological Data	Collect biological data on game harvests to support sustainable population management. Continue as a VDGIF Big Game Check Station (deer, turkey, and bear)	1
Annual FY 16-20	iSportsman Maintenance	Maintain the iSportsman system annually and update software as new technology becomes available	0
Annual FY 16-20	Milkweed mapping	Map the distribution of large milkweed occurrences for inclusion in Monarch butterfly conservation	2
FY16	WASH Plan	Finalize FAPH's Wildlife, Aircraft Strike Hazard plan	1
FY16	Bird banding	Resident goose and wood duck banding program	1
FY16	Herpetofauna survey	Reptile and amphibian baseline survey	1
FY16	Fisheries habitat improvement	Improve fisheries by the placement of habitat structures in managed ponds	3
FY16	Plantation management	Maintain existing fruit and nut tree plantations by reducing competition and releasing these plantings	0
FY16	Control woody vegetation encroachment	Procure a tracked heavy duty mulching machine to reclaim overgrown fields to improve military open area training opportunities and provide vital wildlife habitat diversity	0
FY16	Watchable Wildlife	Establish a Watchable Wildlife Program	3
FY16	Safety Video	Develop a professionally produced Hunter Safety Orientation video	1
FY16	Natural Resources Video	Develop a quality YouTube type video of natural resources opportunities at FAPH for use by visiting troops, base employees, and neighboring public	3

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Table 8-9. FY16-20 INRMP Projects for Fish & Wildlife Management			
FY	**Project Name**	**Project Description**	**Funding Class**
FY16	Safety Boundary Mapping	Determine usage boundary limits around tenant activities areas to increase available acreage for recreation, wildlife management (unrelated to tenant activity), and military training opportunities. Install signage around these limits to clearly show that no recreation activities go beyond that boundary. (AWG, ASP, EOD, etc.)	0
FY17	Backyard Habitat	Develop backyard habitat programs for edge management at Post Housing and public areas	2
FY17	Moist soils habitat management	Initiate woodcock moist soils habitat forest management pilot project	1
FY17	Impoundment Management	Waterfowl pond habitat management project to lower and raise water levels in conjunction with shoreline conservation plantings of millets and other agronomy species	1
FY17	Beaver census	Conduct beaver inventory every four years	1
FY17	MAPS	Establish Partners in Flight stations to monitor avian productivity and survival (MAPS)	1
FY17	Nature Trail	Establish, repair/replace education signage along Nature Trails.	2
FY17	Handicapped Accessibility Program	Maintain and improve programs to provide wheelchair accessibility for hunting, fishing, and boating programs	1
FY17	Angler Parking	Repair/maintain parking areas at recreational fishing ponds	3
FY17	Fish Stocking	Conduct fish stocking as approved by the VDGIF and USFWS to support recreational fisheries	2
FY18	Plantation management	Maintain existing fruit and nut tree plantations by reducing competition, and releasing these plantings	0
FY18	Stream water quality monitoring	Stream water quality monitoring through habitat fish species aquatic invertebrate sampling	1
FY18	Fisheries habitat improvement	Improve fisheries by the placement of habitat structures in managed ponds	3
FY18	Bird List	Review/update Birder's Checklist	3

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Table 8-9. FY16-20 INRMP Projects for Fish & Wildlife Management			
FY	**Project Name**	**Project Description**	**Funding Class**
FY18	Fishing Access	Develop a priority and implementation system for the creation or repair of boat ramp on FAPH managed ponds	3
FY18	Pond Repair	Repair Lonesome Gulch Pond water control structure and dam	2
FY19	Hen wild turkey drop net study	Captured hens to be fitted with backpack transmitters to monitor nesting success and poult survival	3
FY19	Woodcock Habitat Improvement	Conduct moist soil habitat manipulation at selected sites and monitor woodcock use	1
FY19	Plantation Management	Establish additional soft and hard mast tree plantations in areas of FAPH that contain suitable conditions for these plantings	3
FY19	Biological evaluation of Impoundments	Conduct biological evaluations on FAPH's impoundments and streams monitoring reproduction, growth, and population structure and species diversity	3
FY19	Gizzard Shad removal	Renovation of Fish Hook Lake to remove gizzard shad from this ecosystem and restore a fisheries balance	3
FY19	Watchable Wildlife	Establish a Wildlife Viewing Platform and birding trail for natural resources outdoor education	3
FY20	Fisheries Management	Removal of anadramous and catadramous stream fish passage blockages	3
FY20	Habitat management	Renovate existing "Drop Zone" area bordering TA7, TA8, and TA9 to short warm season grasses. Area is heavily eroded, impairing maintenance. Renovated area to be maintained by prescribed burning	3
FY20	Stream water quality monitoring	Stream water quality monitoring through habitat fish species aquatic invertebrate sampling	1

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9.0 ENDANGERED SPECIES MANAGEMENT

9.1 INTRODUCTION

FAPH harbors nine (9) native species of flora and fauna that are listed as either threatened or endangered at the federal and / or state level, and / or are recognized as a DOD SAR (NatureServe 2011); all of which hereafter are collectively referred to as "endangered species" (Table 9-1).

Table 9-1. FAPH Endangered Species List

Species	Type	Federal Status	State Status	DOD Status	State Rank	Global Rank	General Habitat
Indiana Bat (*Myotis sodalis*)	Fauna	LE	LE	-	S1	G2	Forest
Northern Long-eared Bat (*Myotis septentrionalis*)	Fauna	LT	-	-	S3	G2/G3	Forest
Swamp Pink (*Helonias bullata*)	Flora	LT	LE	-	S2/S3	G3	Wetland
Small Whorled Pogonia (*Isotria medeoloides*)	Flora	LT	LE	-	S2	G2	Forest
New Jersey Rush (*Juncus caesariensis*)	Flora	SOC	LT	SAR	S2	G2	Wetland
American Ginseng (*Panax quinquefolius*)	Flora	-	LT	-	S3/S4	G3/G4	Forest
Bachman's Sparrow + *(Peucaea aestivalis)*	Fauna	BCC	LT	SAR	S1	G3	Pine savanna
Rappahannock Spring Amphipod (*Stygobromus foliatus*)	Fauna	SOC	-	SAR	S1/S2	G1/G2	Streams
Rusty Blackbird *Euphagus carolinus*	Fauna	BCC	-	SAR	SNRN	G4	Wetlands, riparian areas

LE = Listed, Endangered | LT = Listed, Threatened | SOC = Species of Concern | SAR = Species at Risk | BCC = Bird of Greatest Conservation Concern

+ Historic occurrence; no evidence to suggest this species is currently present on FAPH

Endangered species and their habitats are managed in accordance with all applicable federal and / or state, laws, regulations, directives, and guidance (Table 9-2).

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Table 9-2. Laws, Regulations, Directives, and Guidance applicable to Endangered Species Management
Federal
The Endangered Species Act, *as amended* (16 U.S.C Sec. 1531-1543 et seq. / 50 CFR 17; 402)
The Sikes Act, *as amended* (16 U.S.C. Sec. 670 et seq. / 32 CFR 190)
The National Environmental Policy Act (42 U.S.C. Sec. 4321 et seq. / 40 CFR 1500)
The Lacey Act, *as amended* **(**16 USC Sec. 3371-3378 / 50 CFR 17)
The Clean Water Act, *as amended* (33 U.S.C 1251 et seq.)
Federal Interagency MOU for Implementation of the Endangered Species Act
Federal Interagency Native Plant Conservation MOU
DOD
DOD Instruction 4715.03 – *Natural Resources Conservation Program*
Conserving Biodiversity on Military Lands: *A Guide for Natural Resource Managers*
DOD-The Nature Conservancy Cooperative Agreement - *To maintain Biodiversity on DOD Lands*
U.S. Army
Army Regulation 200-1 – *Environmental Quality: Environmental Protection and Enhancement*
Fort A.P. Hill
Regulation 200-1 – Environmental Requirements
Commonwealth of Virginia
The Virginia Endangered Species Act (VA. CODE ANN. §29.1-563 to -570)
The Virginia Endangered Plant and Insect Species Act (VA. CODE ANN. §3.2-1000 to 3.2-1011)
Virginia State Water Control Law (§§ VA. CODE ANN. 62.1-44.2 to -44.33:28 / 9 VAC 25, 31, 830, 840, 870)
Virginia Department of Conservation and Recreation Natural Heritage Plan

9.1.1 INRMP AS A SUBSTITUTE FOR CRITICAL HABITAT DESIGNATION

This INRMP is intended to serve as the substitute for Critical Habitat designations under the ESA special management criteria, pursuant to Title 16, U.S.C., Section 1533((a)(3)(B)(i)). In order for this to occur, the INRMP must provide a conservation benefit to the species, the plan must provide certainty that the management plan will be implemented, and the plan must provide certainty that the conservation effort will be effective.

Critical Habitat has never been designated on FAPH for any federally threatened or endangered species, historic or current.

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9.1.2 ROLES AND RESPONSIBILITIES

The FAPH Garrison Commander is responsible for ensuring the INRMP is adequately funded to provide a conservation benefit to endangered species. The DPW ENRD is the office of primary responsibility for the management of natural resources and endangered species on FAPH. The ENRD Chief (or appointed delegate(s)) is responsible for endangered species conservation, management, and inter-agency consultation with the USFWS on a project-specific basis to ensure that endangered species are not impacted by installation activities.

The DES, Provost Marshal's Office is responsible for Conservation Law Enforcement on FAPH, which includes protected species.

9.1.3 MANAGEMENT GOALS & OBJECTIVES

FAPH proactively manages endangered species in accordance with all applicable laws, regulations, directives, and guidance to preclude any Critical Habitat designation on FAPH due to the restrictions to training that would ultimately be incurred. Erosion of FAPH's military readiness would compromise its ability to doctrinally train the Joint Forces, which is a core mission of FAPH. FAPH's endangered species management program is a critical element of this INRMP that meets several goals and objectives (Table 9-3).

Table 9-3. FAPH INRMP Goals, Objectives, and Performance Measures accomplished through the Endangered Species Management Program (in bold)

Goal	Objective(s)	Performance Measure(s)
1.0 Sustainably manage the Army's natural resources to support Mission requirements	1.1 Coordinate with military land users to identify Mission requirements	(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)
	1.2 Sustainably manage habitats to meet doctrinal training requirements	(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned (3) % of Open Areas in prescription (4) Deer density (per mi^2) (5) WASH Plan (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	**(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed**
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved

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Table 9-3. FAPH INRMP Goals, Objectives, and Performance Measures accomplished through the Endangered Species Management Program (in bold)		
Goal	**Objective(s)**	**Performance Measure(s)**
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities	(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR (5) Open area condition (6) Annual updates to Hunting and Fishing Regulations
	2.2 Provide and collaborate in educational/outreach opportunities related to natural resources and management	(1) Outreach events (2) Recreation Safety (3) Public wildlife viewing opportunities
	2.3 Implement activities that mutually benefit installation natural resources management and the community	(1) Recreational user Satisfaction (2) Recreational user trends
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity.	(1) Population indices (2) Suitable habitat (acres) (3) Sufficient no. of adequately trained CLEOs
	3.3 Manage invasive species to limit impacts to native habitats	**(1) Treatment / Control (% of occurrence sites) (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials**

9.2 ENDANGERED SPECIES MANAGEMENT

9.2.1 SWAMP PINK

9.2.1.1 SPECIES PROFILE

Swamp pink (Figure 9-1) is a perennial, obligate wetland, evergreen member of the family Heloniadaceae with a short stout rhizome (Weakley *et al.* 2012). Emergent leaves are typically 8-26 cm long, 1.5-5 cm wide, and form basal rosettes (ramets). The leaves are smooth and generally widest approximately two-thirds of the way from the base of the rosette. Leaves are green and typically come to a soft point (Godfrey and Wooten 1979; Radford *et al*. 1968). Swamp pink clonal reproduction is not well understood and is also believed to be this species' primary reproductive strategy—multiple rosettes are believed to sprout from single rhizomes (USFWS 1991). Individual flowers are small (~ 1 cm wide) with pink petals and lavender-blue anthers. When blooming, 30 to 50 flowers will aggregate to form a distinctive inflorescence

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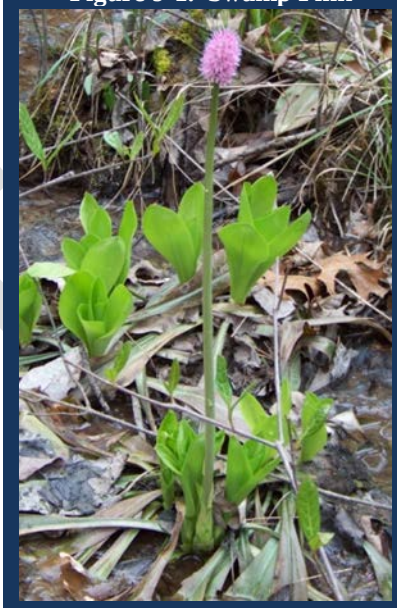
(raceme) at the top of a thick fleshy stalk (scape) up to three feet in height (Godfrey and Wooten 1979; Radford *et al*. 1968).

Flowering occurs from April to May, but only a small percentage of the population blooms annually (USFWS 1991). Swamp pink was listed as a federally threatened species due to decreases in identified populations and habitat throughout its range (USFWS 1988), and it is a state-endangered species in the Commonwealth of Virginia (Townsend 2014). Principle habitat includes swamps, bogs, seeps, drainages, and small streamsides which do not receive prolonged periods of inundation. Flooding instigated by American beaver (*Castor canadensis*) damming or other hydrologic changes can destroy entire populations of swamp pink (Laidig *et al.* 2009; Punsalan 2013). Typical swamp pink habitat on FAPH is classified as an Acidic Seepage Swamp (CEGL006238 – *Acer rubrum - Nyssa sylvatica - Magnolia virginiana / Viburnum nudum var. nudum / Osmunda cinnamomea - Woodwardia areolata* Forest; Red Maple - Blackgum - Sweetbay / Possumhaw / Cinnamon Fern - Netted Chainfern Forest) (Hazler and Taverna 2012).

Figure 9-1. Swamp Pink



9.2.1.2 CONSERVATION AND MANAGEMENT STRATEGY

9.2.1.2.1 DEMOGRAPHIC MONITORING

FAPH conducts population demographic surveys and habitat assessments on 25% of known swamp pink colonies annually to maintain accurate records consistent with USFWS survey guidelines for this species in Virginia. Population demographic surveys for swamp pink are conducted May- August and include the collection of the following information:

a. Number of individual rosettes

b. Number of spatially distinct “clumps” of rosettes

c. Number of individuals flowering

d. Occurrence, extent, and type (i.e., vertebrate, invertebrate) of herbivory (if present)

e. Evidence and severity of beaver activities

f. General habitat conditions, associated species, and location comments

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g. Evidence or impacts from anthropogenic disturbance

h. Occurrence and extent of invasive species

i. Hydrologic conditions

Inflorescence surveys may be conducted in mid-late April.

In the event that a particular swamp pink colony cannot be accessed in the May-September timeframe due to military mission requirements and safety considerations (e.g., safety stand-off from live-fire range usage), an off-season (October-March) demographic survey may be conducted to maintain some level of population data recognizing the limitations associated with an off-season survey.

Swamp pink field survey protocols can be found in Appendix J.

9.2.1.2.2 PLANT PROTECTION

FAPH does not currently employ physical plant protection mechanisms or devices to protect swamp pink from herbivory or other forms of physical damage. The Swamp Pink Recovery Plan (USFWS 1991) identifies herbivory by white-tailed deer as a threat to the long-term conservation of swamp pink. Such herbivory, however, has not been documented on FAPH to any appreciable extent. Consequently, plant protection measures (e.g., cages) to preclude herbivory or damage to plants from wildlife impacts have not been required. FAPH may implement such plant protection measures on a site by site basis as-needed to ensure the long-term conservation of swamp pink.

Hand removal of wind or storm-felled limbs and braches lying directly atop swamp pink plants may also be conducted by ENRD to prevent the loss of swamp pink individuals.

9.2.1.2.3 HABITAT MAINTENANCE AND RESTORATION

9.2.1.2.3.1 HYDROLOGY

The Swamp Pink Recovery Plan (USFWS 1991) identifies hydrologic changes as critical threats to the long-term conservation of swamp pink. Although a wetland plant, swamp pink can sustain neither prolonged inundation nor extended dry periods. Consequently, the maintenance of a sustained natural hydrologic regime is a requisite to ensuring the conservation of this species. Swamp pink habitat is typically characterized by acidic, sandy seeps, and seepage bogs, which at FAPH generally feature slow moving braided stream channels and / or saturated soils that are not inundated (Weakley *et al.* 2012). Beaver activities and impaired stream / wetland crossing (e.g.

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culverts) can have potential impacts to swamp pink habitat through the alteration of hydrologic conditions.

9.2.1.2.3.1.1 CULVERTS

FAPH maintains over 600 culverts that provide conveyances for stormwater, perennial streams, and/or wetland systems; many of these culverts are reaching the end of their life-cycle and are in need of replacement. Approximately 40% of swamp pink colonies s occur in the vicinity of culverts that were installed prior to the species listing. An obstructed or failed culvert has the potential to negatively impact swamp pink upstream by back-flooding (i.e., ponding) the colony, thereby inundating plants beyond the their capabilities to endure. Impounded water on the culvert inlet has the potential to negatively impact downstream occurrences of swamp pink by restricting water to the plants and / or through excessive inundation and sedimentation if the impounded water upstream is not released in a controlled manner. Consequently, culvert maintenance and replacements are a significant element in the conservation of swamp pink on FAPH. Culvert maintenance and replacements are administered by the DPW O&M Division which works closely with the DPW ENRD to ensure that the scheduling, timing, engineering aspects of culvert repairs, replacements, and maintenance activities do not negatively impact swamp pink populations on FAPH.

9.2.1.2.3.1.2 NUISANCE BEAVER CONTROL

American beaver is a prevalent native species at FAPH after being reintroduced to the region in the 1960s and 1970s. The beaver is a furbearing species that can be trapped as part of the Outdoor Recreation Program (Chapter 8 of this INRMP). However, significant impacts have been incurred at numerous swamp pink colonies by beaver dam building activities—most notably alteration of the hydrologic regime. In addition, beavers frequently contribute to culvert failures by obstructing the culvert pipes and erecting debris dams, and they may alter the light regime through the felling of dominant canopy trees within endangered plant colonies. Beaver activities have been observed within more than half of all swamp pink colonies on FAPH with some colonies having incurred significant habitat alteration and loss of plants. Managing beavers at endangered species sites is a recurring management requirement necessary to ensure the conservation of swamp pink on FAPH. Nuisance beaver control will be conducted in coordination with the FAPH's Fish & Wildlife Management program (Chapter 8 of this INRMP) and in accordance with all applicable federal and state laws and regulations (Table 9-2).

9.2.1.2.3.2 VEGETATION MANAGEMENT

9.2.1.2.3.2.1 INVASIVE SPECIES MANAGEMENT

Invasive plant species such as, Japanese stiltgrass (*Microstegium vimineum)*, beefsteak (*Perilla frutescens*), and autumn olive (*Elaeagnus umbellata*), have been identified at several swamp pink colonies on FAPH. Invasive species have the potential to negatively impact swamp pink by

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altering habitat and through direct competition for light and other resources. Non-chemical treatment or removal of invasive species at swamp pink sites will be conducted when possible and in accordance with the Invasive Species Management Component Plan of this INRMP (Chapter 10), to ensure the long-term conservation of swamp pink and its associated habitat on FAPH. FAPH shall coordinate with the USFWS if chemical control is required to control invasive species at swamp pink sites.

9.2.1.2.3.2.2 NATIVE VEGETATION CONTROL

Native herbaceous plants (e.g. skunk cabbage, *Symplocarpus foetidus*) and / or woody understory vegetation (e.g., blueberry, *Vaccinium spp*.) may pose a long-term threat to swamp pink conservation if they occur in sufficient density to shade swamp pink out. Due to an absence of scientific knowledge on swamp pink's response to under- /mid-story light alteration, FAPH shall coordinate with the USFWS to obtain a research permit to study the effects of selectively removing encroaching vegetation in those instances where native vegetation encroachment to swamp pink has been identified.

9.2.1.2.4 FIELD RECONNIASSANCE SURVEYS

Field reconnaissance surveys (i.e., plant detection surveys) for swamp pink are conducted in advance of proposed land disturbing activities to ensure that there are no impacts to undiscovered swamp pink occurrences. Most field reconnaissance surveys are conducted in advance of proposed timber harvesting activities; however, activities such as vegetation management to maintain line of sight, reclamation of open space to support military maneuvers, demolition, and construction may also trigger a field reconnaissance survey. During field reconnaissance, the proposed project area and adjacent area are surveyed by a qualified individual or team that is familiar with swamp pink and its associated habitat. If a previously unknown occurrence of swamp pink is identified, the new occurrence is integrated into the installation's endangered species management program and the VDCR-DNH is notified. Field reconnaissance surveys must be completed during the USFWS-designated survey period (May-September). In the event that a particular proposed project area cannot be accessed May - September due to military mission requirements and / or safety considerations (e.g., safety stand-off from live-fire range usage), an off-season (October - March) field reconnaissance survey for swamp pink habitat may be conducted. If swamp pink habitat was found during an off-season reconnaissance survey then a follow-up survey would need to be conducted during the USFWS recognized survey period at a later date in order for the proposed project to proceed.

9.2.1.2.5 MANAGEMENT BUFFERS AND LAND USE RESTRICTIONS

FAPH implements a 150-foot "limited disturbance" management buffer around swamp pink colonies and associated habitat to ensure land management and other activities do not negatively impact this species or its habitat. Management buffers may exceed 150 feet but are site-specific as determined by the spatial distribution of the habitat, the surrounding vegetation physiognomy,

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recurring land management activities required to maintain the training and range lands (e.g., trail maintenance, grass cutting, infrastructure maintenance), and condition of the upslope drainage area. Activities with the potential to expose soils (e.g., land clearing) or significantly alter the forest canopy (e.g., timber harvesting) are precluded from the management buffers. Low impact silvicultural activities (e.g. mid-story vegetation treatments, invasive species control) and early detection / rapid response of forest insect and disease treatments may be conducted in swamp pink management buffers on an as needed basis provided no direct impacts to swamp pink have been identified. ENRD reviews all Work Orders, military training requests, and land management plans to ensure only the above stipulated activities occur within swamp pink colonies, management buffers, and upslope drainage areas, respectively.

9.2.1.2.5.1 MILITARY TRAINING

Military training is permitted within swamp pink colonies; however, units are required to conduct all mounted maneuver from established roads/trails and refrain from digging or bivouacking within the colony. Military training in the management buffers is unrestricted except for the requirement that tactical vehicles remain on established trails.

9.2.1.2.6 WILDLAND FIRE

Wildland fire has a significant presence on FAPH due to annual prescribed burning operations and wildfire response. A recently completed habitat assessment of swamp pink on FAPH indicates that wildland fire has a neutral to positive benefit to swamp pink by maintaining a more herbaceous dominated herb stratum, which is more conducive to swamp pink. Furthermore, there also appears to be a quantifiable and statistically significant increase in swamp pink vigor, both in terms of rosette size and in the number of leaves in colonies where wildland fire has occurred..

9.2.1.2.6.1 PRESCRIBED FIRE

FAPH conducts large-scale prescribed fires annually to meet a number of land management and conservation-related objectives. Some areas that are burned contain swamp pink along the wetland bottoms.. Due to an absence of scientific knowledge on the effects of fire on swamp pink, FAPH shall coordinate with the USFWS to obtain a research permit to study this dynamic. Prescribed burn operations have been conducted for several decades and shall continue while in coordination with the USFWS regarding this research.

9.2.1.2.6.2 WILDFIRES

Wildfires are a common occurrence on FAPH due to the incendiary nature of military munitions and the active prescribed burn program implemented on the installation. FAPH implements wildfire containment strategies necessary to ensure the life, health, and safety of personnel and the protection of real property without overriding regard to the presence of endangered species.

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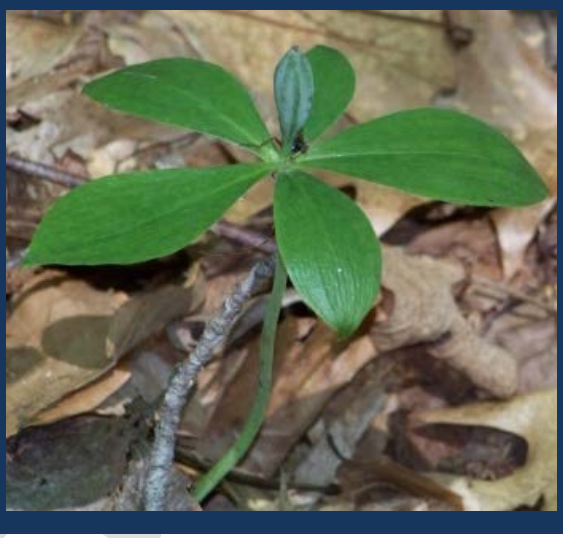
FAPH shall consult with the USFWS in the event that a wildfire or control efforts have negatively impacted a swamp pink occurrence on FAPH.

9.2.2 SMALL WHORLED POGONIA

9.2.2.1 SPECIES PROFILE

Small whorled pogonia (SWP) is a facultative upland, forest dwelling orchid with a historic distribution across much of the eastern United States (Weakley 2012). This species often undergoes periods of both short- and long-term dormancy, which are not well understood and thus necessitate continued annual monitoring (Ware 2000). SWP is characterized by a pale-green, fleshy stem 9.5-25 cm tall, which terminates into a whorl of five to six elliptic leaflets. Flowers are yellowish-green and sub-sessile; only a small number of individuals will bloom in a given year, and an even smaller number produces seed capsules (Radford *et al.* 1968). SWP was listed as a federally endangered species in 1982 due to a decline in the number of colonies and overall population throughout its range (USFWS 1982); however, SWP was subsequently upgraded to a federally threatened species in 1994 following the release of its recovery plan (USFWS 1994). SWP is a state-endangered species in Virginia (Townsend 2014).

Figure 9-2. Small Whorled Pogonia



Throughout its historic distribution, Merhoff (1980) identifies SWP populations occurring in a wide variety of habitats, including: mixed mesophytic forests, oak-chestnut forests, oak-pine forests, beech-maple forests, and northern hardwoods-hemlock-white pine regions (Mehroff 1980; Braun 1950). In Virginia, Weakley *et al.* (2012) describes SWP habitat as "acidic mesic to dry-mesic forests, usually in habitats relatively free of competition from shrubs. In the coastal plain and piedmont, this species most often occurs in mixed beech-oak forests, rarely in drier oak forests." On FAPH, SWP habitat is characterized by mixed hardwood stands that may or may not support pine as part of the dominant canopy; low to moderate understory stem density allows light to reach the forest floor.

9.2.2.2 CONSERVATION AND MANAGEMENT STRATEGY

9.2.2.2.1 DEMOGRAPHIC MONITORING

FAPH conducts population demographic surveys and habitat assessments on a minimum of 50% of its SWP colonies annually to maintain accurate records consistent with USFWS guidelines for

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that species in Virginia. SWP demographic surveys are conducted during the USFWS designated survey period of 1 June – 20 July (USFWS 2015a). The following data are collected at each colony during demographic monitoring:

a. Number of emergent stems

b. Reproductive status (e.g., flowering, vegetative)

c. Herbivory (extent and type if present)

d. Plant height

e. Number of leaves

f. Whorl diameter

g. Occurrence and extent of invasive species

h. Overall habitat conditions

For the SWP colonies scheduled for demographic monitoring, more detailed inflorescence surveys may be conducted in late May.

SWP field survey protocols can be found in Appendix J.

9.2.2.2.2 PLANT PROTECTION

FAPH currently deploys metal cages seasonally (May – October) on all SWP plants at all known SWP sites to prevent white-tailed deer herbivory and provide some measure of general plant protection. The SWP Recovery Plan (USFWS 1992) identified herbivory by white-tailed deer as a threat to the long-term conservation of SWP. Observations of both vertebrate and invertebrate herbivory have been documented by FAPH over the past several years, indicating that plant protections would be beneficial to maintaining the populations of SWP on FAPH. Plant cages are modified tomato cages which are inverted and wrapped in a polyester mesh that allows light to penetrate but dissuades vertebrate herbivory (McCormick *et al.* 2014). FAPH has also fielded motion sensitive cameras at several SWP sites to quantify deer frequency in the vicinity of SWP colonies.

The continued use of seasonal cages to protect SWP plants is contingent upon monitoring results following 5-years of demographic data subsequent to the fielding of cages (expected in FY18).

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9.2.2.2.3 HABITAT MAINTENANCE AND RESTORATION

9.2.2.2.3.1 MAINTAIN / ENHANCE LIGHT REGIMES

The SWP Recovery Plan (USFWS 1992) identifies the alteration of habitat, specifically changes to light regimes, as a principle threat to the long-term conservation of SWP. The potential for alteration of light regimes at the canopy level within SWP sites can arise from anthropogenic disturbances (e.g., timber harvesting), windthrow, or tree felling by beavers. Anthropogenic disturbances are precluded within and around SWP sites based on management controls implemented by FAPH per this INRMP. Windthrow is a naturally occurring phenomenon beyond the scope of FAPH to manage.

Encroaching understory and mid-story vegetation may pose a long-term threat to SWP conservation due to the effects of prolonged shading and increases in competition for light, moisture, and growing space. A limited number of case studies have shown that selective removal of encroaching limbs and competing vegetation while maintaining the forest canopy has resulted in positive responses by SWP ((Brumback *et al.* 2011; McCormick *et al.* 2014). However, this area of inquiry is vastly understudied. Due to the lack of robust data on the effects of SWP to manipulated light levels, FAPH shall coordinate with the USFWS to obtain a research permit to study this dynamic.

9.2.2.2.3.1.1 NUISANCE BEAVER CONTROL

Habitat alteration to one SWP site has been observed due to beaver dam construction activities and the felling of dominant canopy trees. Managing beavers at endangered species sites is a recurring management requirement necessary to ensure the conservation of SWP on FAPH. Nuisance beaver control shall be conducted in coordination with FAPH's Fish & Wildlife Management program (Chapter 8 of this INRMP), FAPH's IPMP (Appendix I) and in accordance with all applicable federal and state laws and regulations.

9.2.2.2.3.1.2 INVASIVE SPECIES MANAGEMENT

Invasive plant species, such as Japanese stiltgrass (*Microstegeum vimineum)*, wineberry (*Rubus phoenicolasius*), and autumn olive (*Elaeagnus umbellata*), have been identified at several SWP colonies on FAPH. Invasive species have the potential to negatively impact SWP by altering habitat and through direct competition for light and other resources. Mechanical removal treatment of invasive species will be conducted in accordance with the Invasive Species Management Component Plan of this INRMP (Chapter 10), and the FAPH IPMP (Appendix I) to ensure the long-term conservation of SWP and its associated habitat on FAPH. FAPH shall coordinate with the USFWS if chemical control is required to control invasive species at SWP sites.

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9.2.2.2.4 FIELD RECONNIASSANCE SURVEYS

Field reconnaissance surveys (i.e., plant detection surveys) for SWP are conducted in advance of proposed land disturbing activities to ensure that no activities negatively impact previously unknown SWP occurrences on FAPH. Most field reconnaissance surveys are conducted in advance of proposed timber harvesting activities; however, activities such as vegetation management to maintain line of sight, reclamation of open space to support military maneuvers, demolition, and construction may also trigger a field reconnaissance survey. During field reconnaissance, the proposed project area and adjacent surrounds are surveyed by a qualified individual or team that is familiar with SWP and its associated habitat. If a previously unknown occurrence of SWP is identified, the new occurrence is integrated into the installation's endangered species management program and the VDCR-DNH is notified. Field reconnaissance surveys must be completed during the USFWS-designated survey period (1 June – 20 July).

In the event that an area in need of survey cannot be accessed in the 1 June – 20 July timeframe due to military mission requirements and / or safety considerations (e.g., safety stand-off from live-fire range usage), an off-season (August-May) field reconnaissance survey for habitat may be conducted. In the event that SWP habitat is found during this out-of season survey, then a field reconnaissance survey for SWP must occur at a later date during the 1 June – 20 July timeframe, otherwise coordination with the USFWS shall be required.

9.2.2.2.5 MANAGEMENT BUFFERS AND LAND USE RESTRICTIONS

FAPH implements a 500-foot "limited disturbance" management buffer around SWP colonies (including habitat) to ensure land management and other activities do not negatively impact this species or its habitat. Management buffers may exceed 500 feet but are site-specific as determined by the spatial distribution of the habitat, the surrounding vegetation physiognomy, recurring land management activities required to maintain the training and range lands (e.g., trail maintenance, grass cutting, infrastructure repairs/maintenance) and condition of the upslope drainage area.

Activities with the potential to expose soils (e.g., land clearing) or significantly alter the forest canopy (e.g., timber harvesting) are precluded from occurring within the management buffers. Low impact silvicultural activities (e.g. mid-story vegetation treatments, invasive species control) and early detection / rapid response of forest insect and disease treatments may be conducted in SWP management buffers on an as needed basis.

Figure 9-3. Sign posted around SWP colonies

ENRD reviews all Work Orders, military training requests, and land management plans to ensure only

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authorized activities occur within SWP colonies, management buffers, and the upslope drainage areas.

9.2.2.2.5.1 MILITARY TRAINING

Military training is permitted within SWP colonies; however, units are required to conduct all mounted maneuver from established roads / trails and refrain from digging or bivouacking within the colony. Military training in the management buffers is unrestricted except for the requirement that tactical vehicles remain on established trails. Signs (Figure 9-3) along the perimeter of each SWP colony serve to alert soldiers of the types of training authorized therein.

9.2.2.2.6 WILDLAND FIRE

9.2.2.2.6.1 PRESCRIBED FIRE

FAPH conducts large-scale prescribed fires annually to meet a number of land management and conservation-related objectives. Known SWP occurrences and their management buffers shall be excluded from all prescribed burn activities (including firebreak construction) absent coordination with the USFWS or inclusion of prescribed burning under a USFWS research permit.

9.2.2.2.6.2 WILDFIRES

Wildfires are a common occurrence on FAPH due to the incendiary nature of military munitions and the active prescribed burn program implemented on the installation. FAPH implements wildfire containment strategies necessary to ensure the life, health, and safety of personnel and the protection of real property without overriding regard to the presence of endangered species. FAPH will consult with the USFWS in the event that a wildfire or control efforts negatively impact a SWP occurrence on FAPH.

9.2.2.2.7 COLLABORATIVE RESEARCH

The life history and reproduction of SWP is not well understood in the scientific community and is consequently the subject of much research. The Smithsonian Environmental Research Center (SERC) is one of the principal federal research agencies working to conserve this species. As one of the establishing members of the North American Orchid Conservation Center, SERC has been conducting region-wide life history research on SWP for several years. To provide a greater conservation benefit to this species, FAPH established a formal partnership with SERC in 2012 to support ongoing research efforts. The knowledge gained by SERC is shared with FAPH to ensure the conservation of this species. Research efforts generally focus on mechanisms of propagation, symbiotic mycorrhizal associations, genetic analysis, and plant response to ambient light levels. This partnership is to the mutual benefit of FAPH and SERC with tangible benefits realized to the long-term conservation of SWP.

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9.2.3 NEW JERSEY RUSH

9.2.3.1 SPECIES PROFILE

Figure 9-4. New Jersey Rush

New Jersey rush (NJR, Figure 9-4) is an obligate wetland graminoid (family Juncaceae) that occurs primarily in sunny, sphagnous seepages and the margins of old beaver ponds. This plant is 40-70 cm tall, and often grows in patches on very spongy terrain. This species is characterized by comparatively large (5-10 mm long) dark-brown to chestnut colored seed capsules which have a distinct tail emerging from the top of the seed head. This characteristic, along with distinctly rough (scabrid), bluish-green leaf blades and culms, make NJR relatively easy to identify as compared to other graminoids. Nevertheless, definitive species identification can only be made during July-October, when the plant has flowers or seeds (Gleason and Conquist 1991; Weakley 2012). NJR is sensitive to circumstances affecting the hydrologic regime of its habitat. Several factors affecting the NJR on FAPH include: alteration of hydrologic regime, beavers, cover/shade, inundation, siltation, and foraging (Wieboldt, 2000).

NJR is a federal species of concern, a state-threatened species, and a DOD SAR.

9.2.3.2 CONSERVATION AND MANAGEMENT STRATEGY

9.2.3.2.1 DEMOGRAPHIC MONITORING

FAPH conducts population surveys and habitat assessments for NJR on at least a third of its species occurrences annually to maintain accurate records for this species. NJR population surveys are conducted from late July – September during peak flowering and / or when the species has seeds. The following data are collected:

a. Number of individual NJR culms

b. Number of spatially distinct NJR “clumps”

c. Occurrence, extent, and type of herbivory, if present

d. Occurrence, extent, and type of beaver impacts, if present

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e. General habitat conditions, species associations, and location comments

f. Evidence of anthropogenic disturbance

g. Extent and type of invasive species, if present

9.2.3.2.2 PLANT PROTECTION

FAPH does not currently employ physical plant protection mechanisms or devices to protect NJR from herbivory or other forms of damage. FAPH may implement such plant protection measures on a site by site as-needed basis in coordination with the USFWS to ensure the long-term conservation of NJR.

9.2.3.2.3 HABITAT MAINTENANCE AND RESTORATION

9.2.3.2.3.1 HYDROLOGY

The alteration of hydrologic conditions is a potential threat to the long-term conservation of NJR, and the maintenance of natural hydrologic conditions is requisite to ensuring the conservation of this species. The potential for alteration of hydrologic regimes within NJR habitats can arise from two sources: failing culverts and flooding caused by American beaver activities (e.g. dam building). There is evidence that NJR may have some dependence on disturbance and may even require occasional flood events to remove encroaching vegetation (Newell and Newell 1994; Strong and Sheridan 1991; Weiboldt 2000). For this reason, FAPH manages hydrologic changes affecting NJR on a case-by-case basis.

9.2.3.2.3.1.1 CULVERTS

Several culverts that provide conveyances for stream/wetland systems are associated with NJR occurrences. Several of these culverts are reaching the end of their life-cycle and are in need of replacement. An obstructed or failing culvert has the potential to negatively impact NJR upstream by back-flooding (i.e., ponding) the colony thereby inundating plants beyond their capabilities to endure. Likewise, impounded water at the culvert inlet upstream has the potential to negatively impact downstream occurrences of NJR through desiccation (i.e. water retention); excessive inundation and sedimentation can also occur if the release of upstream impounded water is not carefully controlled (e.g. during a storm event). Consequently, culvert maintenance and replacements are significant elements to the management of NJR on FAPH.

9.2.3.2.3.1.2 NUISANCE BEAVER CONTROL

By virtue of its habitat type, periodic inundation by beaver activities can be expected. However, in the event that habitat is at risk for substantial alteration or loss of its NJR occurrences, FAPH

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may implement nuisance beaver control, to include the removal or breaching of dams to ensure the long-term conservation of NJR. Periodic monitoring of NJR and its associated habitat condition will inform FAPH's decision-making process in this regard. Nuisance beaver control will be conducted in coordination with FAPH's Fish & Wildlife Management program (Chapter 8 of this INRMP) and in accordance with all applicable federal and state laws and regulations

9.2.3.2.3.2 VEGETATION MANAGEMENT

9.2.3.2.3.2.1 INVASIVE SPECIES MANAGEMENT

Invasive species (e.g., *Murdannia keisak*) may negatively impact NJR sites through direct competition for resources or alteration of habitat conditions. Mechanical removal and/or chemical treatment of invasive species will be conducted in accordance with the Invasive Species Management Component Plan of this INRMP (see Chapter 10 of this INRMP), FAPH's IPMP (Appendix I), and in coordination with the Virginia DCR-DNH.

9.2.3.2.3.2.2 NATIVE VEGETATION CONTROL

NJR is especially susceptible to habitat loss resulting from a lack of disturbance (i.e., successional woody plant encroachment). Based on its light requirements and associated habitat, NJR has some degree of dependence on periodic disturbance (Newell and Newell 1994). Annual mowing of NJR colonies is even believed to benefit this species by reducing woody second-growth vegetation that would compete with NJR or alter bog habitat (Strong and Sheridan 1991). In such cases where habitat loss/degradation have occurred, FAPH may implement NJR habitat restoration using manual, mechanical, or pyrological techniques (see 9.2.3.2.6.1). Manual or mechanical techniques would be implemented in the late winter. Prescribed fire would be conducted in the late spring. All vegetation management activities will be implemented in accordance with all applicable laws, regulations, and guidelines.

9.2.3.2.4 FIELD RECONNIASSANCE SURVEYS

Field reconnaissance surveys (i.e., plant detection surveys) for NJR are conducted in advance of proposed land disturbing activities to ensure that all activities do not negatively impact previously unknown NJR occurrences on FAPH. Most field reconnaissance surveys are conducted in advance of proposed timber harvesting activities; however, activities such as vegetation management to maintain line of sight, reclamation of open space to support military maneuvers, demolition, and construction may also trigger a field reconnaissance survey. During field reconnaissance, the proposed project area and adjacent area are surveyed by a qualified individual or team that is familiar with NJR and its associated habitat. If a previously unknown occurrence of NJR is identified, the new occurrence is integrated into the installation's endangered species management program and the VDCR-DNH is notified.

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9.2.3.2.5 MANAGEMENT BUFFERS AND LAND USE RESTRICTIONS

FAPH implements a 150-foot "limited disturbance" management buffer around NJR colonies (including habitat) to ensure land management and other activities do not negatively impact this species or its habitat. Management buffers may extend outwards a maximum of 150 feet but are site-specific as determined by the spatial distribution of the habitat, the surrounding vegetation physiognomy, and recurring land management activities required to maintain the training and range lands (e.g., trail maintenance, grass cutting, infrastructure maintenance). Activities with the potential to expose soils (e.g., land clearing) or significantly alter the forest canopy (e.g., timber harvesting) are precluded from occurring within the management buffers. Low impact silvicultural activities (e.g. mid-story vegetation treatments, invasive species control) and early detection/rapid response of forest insect and disease treatments may be conducted in NJR management buffers on an as needed basis. ENRD reviews all Work Orders, military training requests, and land management plans to ensure only permitted activities occur within NJR colonies and management buffers.

9.2.3.2.5.1 MILITARY TRAINING

Military training within NJR colonies and their buffers is unrestricted except for the requirement that tactical vehicles remain on established trails.

9.2.3.2.6 WILDLAND FIRE

9.2.3.2.6.1 PRESCRIBED FIRE

FAPH conducts large-scale prescribed fires annually to meet a number of land management and conservation-related objectives. NJR habitats are neither deliberately burned nor explicitly excluded from prescribed fire even though NJR's seepage bog habitat is typically maintained by fire (Fleming *et al.* 2013, Myers 1997, Schafale and Weakly 1990, Weakley and Schafale 1994,). In the absence of fire, the seepage bog habitat associated with NJR rapidly succeeds to shrub swamp, followed by forested swamp vegetation (Fleming *et al.* 2013). With respect to prescribed burning operations, mechanical firebreaks (i.e. plow lines) shall not be established within or through NJR colonies due to the potential for erosion & sedimentation and the introduction of non-native plants. However, handlines around NJR colonies may be created on as needed basis using hand tools or leaf blowers in the event a firebreak is needed in these areas.

9.2.3.2.6.2 WILDFIRES

Wildfires are a common occurrence on FAPH due to the incendiary nature of military munitions and the active prescribed burn program implemented on the installation. FAPH implements wildfire containment strategies necessary to ensure the life, health, and safety of personnel and the protection of real property without overriding regard to the presence of endangered species.

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FAPH shall coordinate with the VDCR-DNH in the event that a wildfire or control efforts have negatively impacted a NJR occurrence on FAPH.

9.2.4 AMERICAN GINSENG

9.2.4.1 SPECIES PROFILE

American ginseng (Figure 9-5) is a perennial herb and member of the family Araliaceae. Leaves are palmately compound and emerge at the top of a central stem. Each leaf (also known colloquially as a "prong") can be from eight to 15 cm wide and features three to five leaflets; the two leaflets closest to the central stem are smaller than the outer leaflets. Ginseng grows within cove forests, mesic hardwood forests, and nutrient-rich forests (Radford *et al.* 1968; Weakly 2012).

Figure 9-5. American ginseng

American ginseng is a state-threatened species and a commercially valuable plant. Though once abundant across its range, American ginseng populations have been greatly reduced due to over-harvesting. In most states, including Virginia, the collection and trade of ginseng is heavily regulated (Weakly 2012).
All harvesting of American Ginseng on FAPH property is strictly prohibited.

9.2.4.2 CONSERVATION AND MANAGEMENT STRATEGY

The following conservation and management strategy for American ginseng is implemented to the greatest extent practicable and is subject to military mission requirements.

9.2.4.2.1 DEMOGRAPHIC MONITORING

FAPH does not conduct population or demographic monitoring for American ginseng but will include the distribution of this species habitat in the installation's planning level survey of vegetation community types.

9.2.4.2.2 PLANT PROTECTION

FAPH does not currently employ physical plant protection mechanisms or devices to protect American ginseng from herbivory or other forms of damage as the greatest threat to the conservation of American ginseng is from illegal harvesting for commercial sale. Consequently, American ginseng is precluded from harvesting on FAPH.

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9.2.4.2.3 HABITAT MANAGEMENT AND RESTORATION

FAPH does not actively manage American ginseng habitat; however, habitat with identified populations of American ginseng are not typically timbered for commercial purposes and are precluded from land development to the greatest extent practicable. At FAPH, American ginseng is often a characteristic plant within late seral old-growth forests, which are considered unique vegetation communities and managed as SNAs (see Chapter 4 of this INRMP) in accordance with DOD and Army policy.

9.2.4.2.4 FIELD RECONNIASSANCE SURVEYS

Field reconnaissance surveys (i.e., plant detection surveys) for American ginseng are conducted in advance of proposed land disturbing activities to ensure land management or construction activities do not negatively impact this species on FAPH. Field surveys are conducted June – September. Field reconnaissance surveys are primarily conducted in advance of proposed timber harvesting activities; however, land management activities such as vegetation management to maintain line of sight or reclaim open space to support military maneuvers may also trigger a field reconnaissance survey. If a previously unknown occurrence of American ginseng is identified, the new occurrence is integrated into the installation's endangered species management program.

9.2.4.2.5 MANAGEMENT BUFFERS AND LAND USE RESTRICTIONS

FAPH implements a 150-foot "limited disturbance" management buffer around ginseng colonies to ensure land management and other activities do not negatively impact this species or its habitat. Management buffers may extend outwards a maximum of 150 feet but are site-specific as determined by the spatial distribution of the habitat, the surrounding vegetation physiognomy, and recurring land management activities required to maintain the training and range lands (e.g., trail maintenance, grass cutting, infrastructure maintenance). Activities with the potential to expose soils (e.g., land clearing) or significantly alter the forest canopy (e.g., timber harvesting) are precluded from occurring within the management buffers. Low impact silvicultural activities (e.g. mid-story vegetation treatments, invasive species control) and early detection/rapid response of forest insect and disease treatments may be conducted in ginseng management buffers on an as needed basis. ENRD reviews all Work Orders, military training requests, and land management plans to ensure only permitted activities occur within ginseng colonies and management buffers.

9.2.4.2.5.1 MILITARY TRAINING

Military training in American ginseng colonies and their management buffers is unrestricted except for the requirement that tactical vehicles remain on established roads/ trails and that the removal of plants is prohibited.

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9.2.4.2.6 WILDLAND FIRE

9.2.4.2.6.1 PRESCRIBED FIRE

Prescribed fires are generally excluded from American ginseng occurrences on FAPH. Exceptions may occur on an as needed basis to support military mission requirements provided that prescribed fires occur outside the growing season (May – September).

9.2.4.2.6.2 WILDFIRES

Wildfires are a common occurrence on FAPH due to the incendiary nature of military munitions and the active prescribed burn program implemented on the installation. FAPH implements wildfire containment strategies necessary to ensure the life, health, and safety of personnel and the protection of real property without overriding regard to the presence of endangered species. FAPH shall coordinate with the DCR-DNH in the event that a wildfire or control efforts have negatively impacted an American ginseng occurrence on FAPH.

9.2.5 RAPPAHANNOCK SPRING AMPHIPOD

9.2.5.1 SPECIES PROFILE

Figure 9-6. Rappahannock Spring Amphipod

Photo credit: Mike Slay

The Rappahannock spring amphipod (Figure 9-6, RSA) is a relatively large (8-11 mm) amphipod usually found in shallow groundwater habitats, such as groundwater seeps and seepage springs that are fed by subterranean groundwater emanating from unconsolidated Coastal Plain sediments of sand, silt, clay, and gravels. This species is characterized by the absence of eyes, a lack of pigment, and elongated appendages. To date, this species has only been recorded from localities on opposite sides of the Potomac River covering an area of 65 by 96 km (Holsinger *et al*. 2011). It has only been within the past few years that his amphipod been recognized as a new species of the subterranean amphipod genus *Stygobromus*. Because this species is relatively new to science, only minimal information is available qualifying it as a DOD SAR.

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9.2.5.2 CONSERVATION AND MANAGEMENT STRATEGY

9.2.5.2.1 SPECIES SURVEYS

The RSA was discovered on FAPH during the 2005-2008 Natural Heritage re-inventory during benthic macro-invertebrate sampling in a small headwater stream system associated with Mount Creek (Culvert *et al.* 2012; Holsinger *et al*. 2011; Van Alstine *et al.* 2010). FAPH has collected planning level survey data for this species which will be used to direct management decisions.

9.2.5.2.2 MANAGEMENT BUFFERS AND LAND USE RESTRICTIONS

FAPH enforces a 100-foot Riparian Protection Area buffer around streams and wetlands (including groundwater seeps) to ensure that land use and land management activities do not negatively impact above-ground conditions associated with this species. This species is also considered pollution/chemical intolerant (Van Alstine *et al.* 2010) therefore water quality is an important consideration in conducting land management actions.

9.2.5.2.2.1 MILITARY TRAINING

There are currently no restrictions or limits placed on military training due to the presence of the RSA.

9.2.6 NORTHERN LONG-EARED BAT

The northern long-eared bat (NLEB) was historically present in every county of Virginia prior to the detection of the new fungal disease (*Pseudogymnoascus destructans)* dubbed white nose syndrome (WNS) circa 2008. However, the last observation of the NLEB on FAPH was in 2001 (Mitchell and Bellows 2002). As a result of WNS, the NLEB population has experienced population declines in excess of 90% throughout its range. Due to the drastic population declines over a relatively short duration, the NLEB has been listed as a threatened species under the ESA (USFWS 2015b). NLEB surveys were initiated in 2014 prior to its listing under the ESA with detections at several locations on the installation. There have been no visual sightings or captures of the NLEB since 2001.

Figure 9-7. The Northern Long-Eared Bat

Photo credit: USGS

DRAFT

9.2.6.1 SPECIES PROFILE

The NLEB (Figure 9-7) is a medium-sized bat with relatively long ears, each with a long, sharply pointed tragus (fleshy projection in the ear). The pelage is dull brown on the back and pale grayish brown on the underside. The membranes are dark, and the calcar (bone or cartilage growth from the ankle that helps to support the tail membrane in flight) is slightly keeled. (Bellows *et al.* 2001). Adults typically measure 78-95 mm (3.1-3.7 in.), with a tail length of 32-34 mm (1.2-1.3 in.). Weights range from 5-6.4 g (0.18-0.23 oz.); the NLEB can be distinguished by its long ears, which, when folded forward, extend at least 3 mm beyond its nose (Caceres and Barclay 2000; Bellows *et al.* 2001). The NLEB is a cave hibernating bat. Upon emergence in late spring, it migrates to forested habitat, and its preference is hardwood or mixed pine-hardwood stands in proximity to wetlands (Caceres and Barclay 2000; Bellows *et al.* 2001).

9.2.6.2 CONSERVATION AND MANAGEMENT STRATEGY

9.2.6.2.1 MONITORING

FAPH updates its monitoring information for the northern long-eared bats every three (3) years in accordance with USFWS survey guidelines to ensure adequate records on this species' distribution on FAPH. NLEB survey results shall be shared with the USFWS (VFO) annually in partial fulfillment of Interagency Consultation (as needed) and annual coordination on the implementation of this INRMP. For planning purposes, the active season for the NLEB in Virginia is 15 April through 15 September.

9.2.6.2.2 FIELD RECONNAISSANCE SURVEYS

Where current surveys do not exist, FAPH shall conduct site-specific NLEB surveys in accordance with current USFWS survey guidelines prior to conducting timber harvesting and / or tree removal activities to document the species presence / absence. These survey results shall be shared with the USFWS in partial fulfillment of interagency consultation and annual coordination on the implementation of this INRMP.

9.2.6.2.3 MANAGEMENT BUFFERS & LAND USE RESTRICTIONS

Per the U.S. Army (IMCOM) and the USFWS Programmatic Agreement regarding the NLEB (USACE 2015), management buffers and associated land use restrictions for the NLEB include:

a. A minimum of 150 ft. buffer around known roost trees within which military smoke and obscurants (including M-18 colored smoke, white phosphorous (see 9.2.6.2.5 below) and fog oil) will be prohibited during the active season. Military bivouacking will be restricted within this area year-round.

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b. 0.25-mile buffer around known roost trees within which timber harvesting and construction are precluded year-round unless consultation with the USFWS occurs; selection harvesting of trees may occur within the 0.25-mile buffer but only during the inactive season and only after consultation with the USFWS. Prescribed burning may occur within this buffer if outside the active season and hand lines are established around the known roost trees.

c. 1.5 mile buffer around known roost trees within which timber harvesting / tree removal and prescribed burning will be prohibited during the active season unless additional surveys have been completed to show species absence or coordination with the USFWS occurs.

d. 3.0 mile buffer around any capture sites where a roost tree location is not known or an acoustical detection, within which, timber harvesting / tree removal and prescribed burning will be prohibited during the active season unless additional surveys have been completed to show species absence or coordination with the USFWS occurs.

Additionally, any trees greater than 3.0 inches in diameter will not be cut or removed during the active season.

9.2.6.2.4. HABITAT ENHANCEMENT PROJECTS

Habitat enhancement projects (e.g., artificial roosts, artificial forage areas) may be instituted, however coordination with the USFWS shall be required.

9.2.6.2. 5 MILITARY TRAINING

The USFWS and the U.S. Army have established that the only aspects of conventional military training that pose a risk to the NLEB are i) military smoke / obscurants, ii) white phosphorous, and iii) fog oil (USAEC 2015). Therefore, FAPH will utilize NLEB survey data to determine areas where NLEB are present and preclude the use of military smoke / obscurants (including fog oil) in NLEB occupied areas during the active season. White phosphorous is only used in the dedicated Impact Area which is a fire-dominated herbaceous openland type that is not suitable habitat for the forest-dwelling NLEB.

9.2.6.2.6 WILDLAND FIRE

9.2.6.2.6.1 PRESCIRBED BURNING

The value of prescribed fire to create and manage forested habitat for the NLEB is well documented in the scientific literature. However, prescribed fire implemented within NLEB occupied habitat during the pup season could result in the loss of pups that are not yet able to fly. To avoid potential impacts to the NLEB, FAPH shall restrict prescribed burning in NLEB

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occupied areas of the installation to outside the active season unless coordination with the USFWS has occurred.

9.2.6.6.2 WILDFIRES

Wildfires occur seasonally on FAPH due to lightning, incendiary military munitions, or fire escapes from prescribed burning. Information on any significant wildfires (i.e, sufficient to modify the canopy of forested habitat) that occur during the active season will be provided to the USFWS.

9.2.7 BACHMAN'S SPARROW

9.2.7.1 SPECIES PROFILE

The Bachman's sparrow (Figure 9-8) is a large sparrow with a flat forehead, large bill, and long rounded tail. Body plumage is gray above and heavily streaked with chestnut or dark brown on the head, neck, and back. The breast and sides of the body and head are huffy-gray, and the belly is whitish. Subspecies vary in shading from reddish brown in the western part of the range to grayish brown in the southern part. The head has a broad, grayish stripe above the eye and a thin dark line behind the eye; the sides of the neck are streaked with russet.

Figure 9-8. Bachman's Sparrow

Photo credit: Greg Lasley, Texas A&M Univ.

A ground nesting bird, the Bachman's sparrow is a fire dependent species, selecting pine savanna or similar habitat. The Bachman's sparrow is a year-round resident in the southeastern states (Texas to North Carolina) but will migrate into the Mid-Atlantic region for breeding. Bachman's sparrow is a state listed threatened species and is recognized by the USFWS as a Bird of Greatest Conservation Concern (USFWS 2008) requiring management consideration under the MBTA (See Chapter 8 of this INRMP).

9.2.7.2 CONSERVATION AND MANAGEMENT STRATEGY

9.2.7.2.1 SPECIES SURVEYS

The Bachman's sparrow was observed and heard during the first natural heritage inventory of FAPH c.1992 (Fleming and Van Alstine 1994). Subsequent surveys conducted by VDCR-DNH biologists and installation Fish & Wildlife biologists have not detected this species. Consequently, this species occurrence is considered *historic* by the VDCR-DNH (Van Alstine *et.*

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al. 2010). FAPH will continue to periodically survey for this species to determine its presence / absence.

9.2.7.2.2 MANAGEMENT BUFFERS AND LAND USE RESTRICTIONS

The pine savanna habitat this species requires is located at FAPH within the live-fire Range Complex. This habitat was established and is maintained by a wildland fire regime that is characterized by relatively frequent wildfires that result from the use of incendiary military munitions and prescribed burning for fuel load reduction. This wildland fire regime has been shaping the character of this natural community for more than 50 years resulting in a unique natural community reminiscent of pre-European settlement conditions, which is rare in the Commonwealth of Virginia (Fleming et. al. 2013). Consequently, there are no current restrictions to military training as those activities maintain the habitat. Pine savanna habitat in the live-fire Range Complex shall be maintained and commercial timbering shall not be conducted unless required to support the Military Mission and/or range development.

9.2.8 RUSTY BLACKBIRD

9.2.8.1 SPECIES PROFILE

The rusty blackbird (Figure 9-10) is a medium-sized blackbird that prefers wet forested areas, breeding in the boreal forest and muskeg across northern Canada, and migrating southeast to the United States during winter. Formerly abundant, the rusty blackbird has undergone one of the more rapid declines of any abundant bird species in North America in recent years due to unknown causes. Adults have a pointed bill and a pale yellow eye. They have black plumage with faint green and purple gloss; the female is grayer.

Figure 9-10. Rusty Blackbird

Photo credit: Cornell University

Rusty blackbirds forage on wet ground or in shallow water, mainly eating insects, small fish and some seeds. Their most common mode of foraging is to vigorously flip leaves and rip at submerged aquatic vegetation. The mast of small-acorn producing oaks, such as willow oak, is also important. This species is recognized by the USFWS as a Bird of Greatest Conservation Concern (USFWS 2008).

DRAFT

9.2.8.2 CONSERVATION AND MANAGEMENT STRATEGY

9.2.8.2.1 SPECIES SURVEYS

The rusty blackbird is a seasonal migrant on FAPH, commonly occurring in flocks with other similar sized and similar colored species (e.g., Common Grackle, *Quiscalus quiscula*; Red-winged Blackbirds, *Agelaius phoeniceus*; and European Starlings, *Sturnus vulgaris*).

9.2.8.2.2 MANAGEMENT BUFFERS AND LAND USE RESTRICTIONS

There are currently no species-specific habitat management buffers or protections due to the absence of a documented occurrence on FAPH. However, riparian foraging habitat this species requires is protected from land disturbance in accordance with FAPH's enhanced RPA policy. As a migratory species, direct take or harm of this species, its nest, or eggs, if present on FAPH, would be prohibited under the MBTA.

9.2.9 PITCHER PLANTS

FAPH harbors several species of federally listed but non-native pitcher plants originally discovered during the first natural heritage inventory of FAPH (Fleming and Van Alstine 1994). Though not native to Virginia, these species are still protected under the ESA. A USFWS permit shall be required to remove and transport these species in the event FAPH elects to remove these non-native species.

9.2.10 INDIANA BAT

9.2.10.1 SPECIES PROFILE (USFWS 2015c)

The Indiana bat is a small to medium-sized bat with dark brown to black fur. The Indiana bat is similar in appearance to many other related species, however identification can be made by comparing characteristics such as the structure of the foot and color variations in the fur. Indiana bats hibernate during winter in caves or, occasionally, in abandoned mines. For hibernation, they require cool, humid caves with stable temperatures, under 50° F but above freezing. Very few caves within the range of the species have these conditions. If bats are disturbed or cave temperatures increase, more energy is needed and hibernating bats may starve. After hibernation, Indiana bats migrate to their summer habitat in wooded areas where they usually

Figure 9-11. Indiana bat capture on FAPH

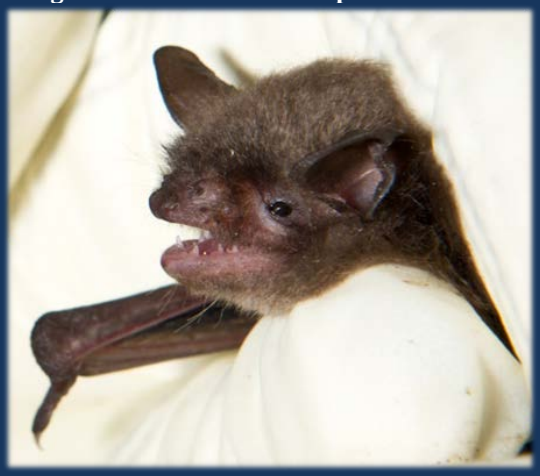

Photo credit: USGS / Virginia Polytechnic and State University (Conservation Management Institute)

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roost under loose tree bark on dead or dying trees. During summer, males roost alone or in small groups, while females roost in larger groups of up to 100 bats or more. Indiana bats also forage in or along the edges of forested areas.

Indiana bats mate during fall before they enter caves to hibernate. Females store the sperm through winter and become pregnant in spring soon after they emerge from the caves. After migrating to their summer areas, females roost under the peeling bark of dead and dying trees in groups of up to 100 or more. Such groups are called maternity colonies. Each female in the colony gives birth to only one pup per year. Young bats are nursed by the mother, who leaves the roost tree only to forage for food. The young stay with the maternity colony throughout their first summer.

9.2.10.2 CONSERVATION & MANAGEMENT STRATGEY

9.2.10.2.1 MONITORING

FAPH harbors the first documented maternity roost for the Indiana bat in Virginia, discovered while conducting surveys to determine presence / absence of the NLEB. FAPH updates its monitoring information for the Indiana bat every three (3) years in accordance with USFWS survey guidelines to maintain records on this species distribution on FAPH. Indiana bat survey results shall be shared with the USFWS as part of interagency consultation and annual coordination on the implementation of this INRMP. For planning purposes, the active season for the Indiana bat in Virginia is 15 April through 15 September.

9.2.10.2.2 FIELD RECONNAISSANCE SURVEYS

When current surveys do not exist, , FAPH shall conduct site-specific Indiana bat surveys in accordance with USFWS survey guidelines prior to conducting timber harvesting and / or tree removal activities to document the species presence or absence. These survey results shall be shared with the USFWS as part of annual coordination on the implementation of this INRMP.

9.2.10.2.3 MANAGEMENT BUFFERS & LAND USE RESTRICTIONS

Management buffers and associated land use restrictions for the Indiana bat include:

e. A minimum of 150 ft. buffer around known roost trees within which military smoke and obscurants (including M-18 colored smoke, white phosphorous (see 9.2.10.2.5 below) and fog oil) will be prohibited during the active season. Military bivouacking will be restricted within this area year-round.

a. 0.25-mile buffer around known roost trees within which timber harvesting and construction are precluded year-round unless consultation with the USFWS occurs; selection harvesting of trees may occur within the 0.25-mile buffer but only during the

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inactive season and only after consultation with the USFWS. Prescribed burning may occur within this buffer if outside the active season and hand lines are established around the known roost trees.

f. 2.5 mile buffer around known roost trees within which timber harvesting / tree removal and prescribed burning will be prohibited during the active season unless additional surveys have been completed to show species absence or coordination with the USFWS occurs.

b. 5.0 mile buffer around capture sites or acoustic detections where a roost tree location is unknown, within which, timber harvesting / tree removal and prescribed burning will be prohibited during the active season unless additional surveys have been completed to show species absence or coordination with the USFWS occurs.

Additionally, any trees greater than 5.0 inches in diameter will not be cut or removed during the active season.

9.2.10.2.4. HABITAT ENHANCEMENT PROJECTS

Habitat enhancement projects (e.g., artificial roosts) may be instituted, however coordination with the USFWS shall be required.

9.2.10.2. 5 MILITARY TRAINING

It has been established by the USFWS and the U.S. Army (via USFWS issued Biological Opinions to other Army installations) that the only aspects of conventional military training that pose a risk to the Indiana bat are military smoke / obscurants, white phosphorous, and fog oil. Therefore FAPH will utilize Indiana bat survey data to determine areas where they are present and preclude the use of military smoke / obscurants (including fog oil) in Indiana bat occupied areas during the active season. White phosphorous is only used in the dedicated Impact Area which is a fire-dominated herbaceous openland type that is not suitable habitat for the forest-dwelling Indiana bat.

9.2.10.2.6 WILDLAND FIRE

9.2.10.2.6.1 PRESCRIBED BURNING

The value of prescribed fire to create and manage forested habitat for the Indiana bat is well documented in the scientific literature. However, prescribed fire implemented within Indiana bat occupied habitat during the pup season could result in the loss of pups that are not yet able to fly. Consequently, FAPH will restrict prescribed burning in Indiana bat occupied areas of the installation to outside the active season.

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9.2.10.6.2 WILDFIRES

Wildfires occur seasonally on FAPH due to lightning, incendiary military munitions, or fire escapes from prescribed burning. Information on any significant wildfires (i.e, sufficient to modify the canopy of forested habitat) that occur during the active season in known Indiana bat occupied areas of the installation will be provided to the USFWS.

9.3 ENDANGERED SPECIES AWARENESS TRAINING

FAPH will enshrine the importance of endangered species management across installation operations by conducting Endangered Species Awareness Training annually for individuals associated with the maintenance of trails, grounds, facilities, or any Garrison personnel that spend significant time in proximity to endangered species' habitat. FAPH includes endangered species information in its Environmental Handbook (a reference manual for Soldiers training on FAPH) to foment a cultural understanding of the role of endangered species on the installation and individual requirements—thus ensuring compliance with federal law, DOD and Army policy.

9.4 INTERAGENCY CONSULTATION

Section 7(a)(2) of the ESA requires that all federal agencies consult with the USFWS prior to implementing proposed actions that may affect federally listed species (including Proposed and Candidate species). ENRD is responsible for making the initial determination and assessment of a proposed action's impacts to natural resources, and special emphasis is provided to endangered species and their habitats. Based on ENRD's determination, the review of the proposed action will proceed through two sub-processes: Natural Resources Site Assessments and / or Endangered Species Consultation. ENRD understands the details of Mission activity and recommends conditions and / or stipulations to preclude impacts to protected species - thus avoiding consultation with the USFWS, which saves precious time.

9.5 DISTRIBUTION OF ENDANGERED SPECIES INFORMATION

FAPH shall develop annual technical reports documenting endangered species management efforts (e.g., population demographic surveys, habitat condition assessments) for endangered species and provide those reports to the USFWS and VDCR-DNH in fulfillment as contribution to the regional conservation and understanding of these species and in partial fulfillment of this INRMP.

9.6 SUPPORTING ACTIONS AND PROJECTS FY16-20

The following projects and actions have been identified for completion FY16-20 to meet all statutory requirements pertaining to endangered species management and ensure FAPH provides a conservation benefit to listed species (Table 9-4).

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Table 9-4. Endangered Species Management-Specific Projects FY16-20			
FY	Project Name	Project Description	Funding Class +
Annual (16-20)	Endangered Plant Species Monitoring	Demographic monitoring of endangered plants species	0
Annual (16-20)	Endangered Plant Species Database	Update the FAPH endangered species management database of record	0
Annual (16-20)	Endangered Species Awareness Training	Provide Endangered Species Awareness Training to installation staff; develop information / awareness materials	0
Annual (16-20)	Endangered Plant Surveys	Conduct field reconnaissance surveys of proposed forest management / tree removal sites	0
Annual (16-20)	Swamp Pink Habitat Management	Remove nuisance beavers and control invasive plant species in swamp pink colonies to maintain habitat and species occurrences	1
Annual (16-20)	Small Whorled Pogonia Habitat Management	Remove invasive plant species and encroaching native vegetation from SWP colonies; monitor light level responses	1
Annual (16-20)	Indiana Bat NLEB Surveys	Conduct acoustical surveys and mist netting to determine presence/absence of the NLEB	1
Annual (16-20)	Bachman's sparrow surveys	Conduct field surveys to determine presence / absence of the Bachman's sparrow	2
Annual (16-20)	Rusty Blackbird	Conduct field surveys to determine presence / absence of the Rusty blackbird	2
16	RSA Distribution Map	Develop a distribution map for the RSA to aid in land use planning and NEPA analysis	2
17	Swamp Pink Habitat Restoration	Remove a degraded and failing culvert currently impacting swamp pink to restore natural stream hydrology	1
17	Programmatic Biological Assessment	Prepare a Programmatic Biological Assessment for the life-cycle replacement of culverts / LWX that coincide with swamp pink locations	1
17	Pitcher plant removal	Remove non-native, federally-listed pitcher plants	1
17	Swamp pink Predictability Model	Continue to update and improve the swamp pink GIS predictability model to assist in prioritizing forest areas for field reconnaissance surveys	3

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Table 9-4. Endangered Species Management-Specific Projects FY16-20			
FY	Project Name	Project Description	Funding Class +
17	SWP Predictability Model	Develop a SWP GIS predictability model to assist in prioritizing forest areas for field reconnaissance surveys	3
18	Programmatic Biological Assessment	Develop a Biological Assessment to cover Installation Operations for a 3-year period to ensure no impacts to the Indiana Bat and NLEB	1
+ Prioritization based upon U.S. Army Guidance			

9.7 PROJECT REVIEW PROCESS

ENRD reviews all military training requests and project proposals (including vegetation management, timber harvests, construction, and utilities) to ensure that all aspects of environmental management and natural resources conservation are integrated into the planning process, which includes endangered species protection. Several, activity specific, workflow processes exist to ensure that project reviews occur; findings are documented across several formats. The role of ENRD is to understand the Mission, evaluate each project, and proffer solutions to preclude negative impacts to endangered species (if any). If all potential impacts to endangered species can be avoided from a proposed action, then interagency consultation with the USFWS is not necessary.

9.8 ENDANGERED SPECIES MANAGEMENT SUMMARY

FAPH implements administrative processes and management controls to ensure that endangered species are not adversely impacted by military training operations, installation land management activities, and that endangered species populations and habitats are maintained and improved to ensure a conservation benefit is provided to listed species. FAPH's primary management strategy is to avoid disturbing endangered species; the objective is to preclude adverse impacts from military training and/or land management activities (i.e., mitigate through avoidance). In addition to "mitigation through avoidance," ENRD utilizes the following tools to manage the protected species within its jurisdiction: annual surveys, natural resource inventories, stewardship buffers, habitat maintenance, and Endangered Species Awareness Training.

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10. INVASIVE SPECIES MANAGEMENT COMPONENT PLAN

10.1 INTRODUCTION

Invasive species are non-native species that have been introduced to an area outside their historic and natural distribution and have since proliferated causing significant impacts to native species, biological communities, and ecosystem processes and functions. Many invasive species thrive at the expense of native species and habitats outside their native range due to an absence of predators and/or other population limiting mechanisms. Invasive species may also directly impact training missions by altering terrain conditions outside of doctrinally required parameters (see Chapter 6 of this INRMP). Consequently, invasive species pose a significant long-term challenge to natural resources, protected species, and the military readiness of FAPH.

There are currently more than 60 non-native species identified on FAPH, 31 of which (53%) are considered highly or moderately invasive (Table 10-1). Only a few invasive plant species warrant active management due to their negative impacts to protected species, native communities, wildlife food sources, and risk for adversely altering the training environment. Autumn olive is the invasive species that most directly negatively impacts the military mission by encroaching on and overtaking open training and maneuver space and encroaches along trails. Open areas left unmanaged for several growing seasons typically succumb to autumn olive encroachment, consequently increasing the resources required to manage open areas

All invasive species management on FAPH is conducted in accordance with the installation's IPMP (Appendix I) which requires holistic treatment and management strategies that minimize the use of chemicals to the greatest extent practicable while leveraging non-chemical alternatives to meet stated objectives.

10.2 ROLES AND RESPONSIBILITIES

The DPW Director is the proponent for noxious weeds and invasive species management.

The Installation Integrated Pest Management Program Coordinator is responsible for ensuring that all pest management activities, including invasive species control, are conducted in accordance with all applicable federal, state, local laws, directives, and guidance (Table 10-2).

The DPW (Pest Control Office) is responsible for conducting chemical control of invasive plants on FAPH and overseeing all pesticide application on the installation if conducted by a contractor.

The DPW ENRD is responsible for documenting and tracking invasive species control and treatments in accordance with this INRMP.

The DPTMS Range Operation Division (ITAM) is responsible for conducting vegetation

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management actions, including invasive plant species control, within its defined areas of responsibility, in accordance with this INRMP and FAPH's IPMP (Appendix I).

Table 10-1 Invasive Species with known occurrences on FAPH

Common Name	Species Name	Growth Habit	Invasiveness (VA DCR-DNH)
Aneilema	*Murdannia keisak*	Forb/Herb	High
Autumn olive	*Elaeagnus umbellata*	Shrub	High
Canada thistle	*Cirsium arvense*	Forb/Herb	High
Chinese Lespedeza	*Lespedeza cuneata*	Forb/Herb	High
Chinese privet	*Ligustrum sinense*	Shrub	High
Common reed	*Phragmites australis ssp. australis*	Forb/Herb	High
Gypsy moth	*Lymantria dispar*	Insect	High
Hydrilla	*Hydrilla verticilata*	Aquatic plant	High
Japanese honeysuckle	*Lonicera japonica*	Vine	High
Japanese stiltgrass	*Microstigeum vimineum*	Graminoid	High
Japansese knotweed	*Reynoutria japonica*	SubShrub Herb	High
Johnson grass	*Sorghum halepense*	Graminoid	High
Kudzu	*Pueraria montana*	Vine	High
Multiflora rose	*Rosa multiflora*	Shrub	High
Oriental bittersweet	*Celastrus orbiculatus*	Vine	High
Spotted knapweed	*Centaurea stoebe ssp. micranthos*	Forb/Herb	High
Tree-of-Heaven	*Ailanthus altissima*	Tree	High
Waterwheel Plant	*Aldrovanda vesiculosa*	Aquatic plant	High
Wineberry	*Rubus phoenicolasius*	Shrub	High
Blunt-leafed privet	*Ligustrum obtusifolium*	Shrub	Medium
Bull Thistle	*Cirsium vulgare*	Forb/Herb	Medium
Callery (Bradford) Pear	*Pyrus calleryana*	Tree	Medium
Chinese wisteria	*Wisteria sinensis*	Vine	Medium
Common chickweed	*Stellaria media*	Forb/Herb	Medium
English ivy	*Hedera helix*	Vine	Medium
Gill -over-the-ground	*Glechoma hederacea*	Forb/Herb	Medium
Golden Bamboo	*Phyllostachys aurea*	Graminoid	Medium
Hairy joint grass	*Arthraxon hispidus*	Graminoid	Medium

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Table 10-1 Invasive Species with known occurrences on FAPH			
Common Name	**Species Name**	**Growth Habit**	**Invasiveness (VA DCR-DNH)**
Japanese barberry	*Berberis thunbergii*	Shrub	Medium
Japanese spiraea	*Spiraea japonica*	Shrub	Medium
Long-bristled Smartweed	*Persicaria longiseta*	Forb/Herb	Medium
Mimosa	*Albizia julibrissin*	Tree	Medium
Royal paulownia	*Paulownia tomentosa*	Tree	Medium
Sheep Sorrel	*Rumex acetosella*	Forb/Herb	Medium
Tatarian honeysuckle	*Lonicera tatarica*	Shrub	Medium
Wild Teasel	*Dipsacus fullonum*	Forb/Herb	Medium
Asiatic Dayflower	*Commelina communis*	Forb/Herb	Low
Beefsteak Plant	*Perilla frutescens*	Forb/Herb	Low
Crown vetch	*Securigera varia*	Forb/Herb	Low
Curly dock	*Rumex crispus ssp. crispus*	Forb/Herb	Low
Greater Periwinkle	*Vinca major*	Forb/Herb	Low
Japanese Wisteria	*Wisteria floribunda*	vine	Low
Periwinkle	*Vinca minor*	Vine	Low
Shrubby bushclover	*Lespedeza bicolor*	Forb/Herb	Low
Silver Poplar	*Populus alba*	Tree	Low
Timothy	*Phleum pratense*	Graminoid	Low
White Mulberry	*Morus alba*	Tree	Low

Table 10-2 Laws, Regulations, Directives, and Guidance applicable to Invasive Species Management
Federal
Clean Water Act, *as amended* (33 U.S.C. Sec 1251 et seq. / 33 CFR 320-332; 40 CFR 22, 231-232, 332)
Federal Noxious Weed Act (7 U.S.C. Sec. 2801, 2814)
Noxious Weed Control and Eradication Act (7 U.S.C. 7781, *as amended* / 20 CFR 408)
Plant Protection Act, *as amended* (7 U.S.C 7701 / 7 CFR 300-380)
Non-indigenous Aquatic Nuisance Prevention and Control Act (16 U.S.C. Sec 4701)
Federal Insecticide, Fungicide, and Rodenticide Act, *as amended* (7 U.S.C. Sec. 136 et seq. / 19 CFR 12; 29 CFR 1440; 40 CFR 3, 9, 22, 30, 31); 40 CFR 32, 34, 35, 152, 153, 155, 156, 158, 159, 162, 165-168, 174, 451
Resource Conservation and Recovery Act, *as amended* (42 U.S.C. Sec. 6901 et seq. / 40 CFR 3, 9, 30, 31, 34, 35, 40, 124, 144-148, 233, and 451)

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Federal (con't.)
Emergency Planning and Community Right to Know Act (42 U.S.C Sec. 11004 et seq. / 40 CFR 350-372)
Animal Damage Control Act (7 USC Sec. 426)
The Sikes Act, *as amended* (16 U.S.C. Sec. 670 et seq. / 32 CFR 190)
National Environmental Policy Act (42 U.S.C. 4321 et seq. / 32 CFR 651; 775)
Endangered Species Act, *as amended* (16 U.S.C Sec. 3371 et seq. / 50 CFR 402)
Executive Order 13112 – *Invasive Species* (64 Fed. Reg. 6183)
Executive Order 13508 – *Chesapeake Bay Protection and Restoration* (74 Fed. Reg. 23099)
National Invasive Species Management Plan
DOD
DOD Instruction 4715.03 – *Natural Resources Conservation Program*
DOD Instruction 4150.7 – *DOD Pest Management Program*
DOD-USDA MOU – *Conduct of Forest Insect & Disease Suppression*
DOD-USDA-APHIS-ADC MOU – *Animal Damage Assessment and Control*
DOD-EPA MOU – *Integrated Pest Management*
Conserving Biodiversity on Military Lands: *A Guide for Natural Resource Managers*
DOD-USDA MOA – *Food, Agriculture, Pest Management, Nutrition, Related Homeland Security Requirements and Other Research of Mutual Interest*
U.S. Army
Army Regulation 200-1 – *Environmental Quality: Environmental Protection and Enhancement*
PWTB 200-1-131 - *Non-Native Invasive Species Management Guidelines*
U.S. Army (con't.)
PWTB 200-1-19 - *Guidance for Non-native Invasive Plant Species on Army Lands: Eastern United States*
Army Policy Guidance for the Management and Control of Invasive Species
Fort A.P. Hill
Integrated Pest Management Plan (Appendix I)
Commonwealth of Virginia
Virginia State Water Control Law (§§ VA. CODE ANN. 62.1-44.2 to -44.33:28 / 9 VAC 25, 31, 830, 840, 870)
Virginia Pest Law (§§ VA. CODE ANN. 3.2-700 to -713)
Virginia Noxious Weed Law (§§VA. CODE ANN. 3.2-800 to -809 / 2 VAC 5- 317)
Virginia Non-indigenous Aquatic Nuisance Species Act (§§VA. CODE ANN. 29.1-571 to -577)
Virginia Pesticide Control Act (VA. CODE ANN. §§ 3.2-3900 to -3913 / 2VAC5-670)
Virginia Invasive Species Management Plan

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0.3 MANAGEMENT GOALS AND OBJECTIVES

Managing invasive species meets several INRMP goals and objectives (Table 10-3).

Table 10-3. INRMP Goals, Objectives, and Performance Measures Accomplished by Invasive Species Management (in bold)

Goal	Objective(s)	Performance Measure(s)
1.0 Sustainably manage the Army's natural resources to support Mission requirements	1.1 Coordinate with military land users to identify Mission requirements	(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)
	1.2 Sustainably manage habitats to meet doctrinal training requirements	(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned **(3) % of Open Areas in prescription** (4) Deer density (per mi^2) (5) WASH Plan (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment **(5) % of Habitat maintenance activities completed**
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	**2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities**	(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR **(5) Open area condition** (6) Annual updates to Hunting and Fishing Regulations
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	(1) Outreach events (2) Recreation Safety (3) Public wildlife viewing opportunities
	2.3 Implement activities that mutually benefit installation natural resources management and the community	(1) Recreational user Satisfaction (2) Recreational user trends
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity	(1) Population indices **(2) Suitable habitat (acres)** (3) Sufficient no. of adequately trained CLEOs
	3.3 Manage invasive species to limit impacts to native habitats	**(1) Treatment / Control (% of occurrence sites) (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials**

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10.4 INVASIVE SPECIES AND CONTROL STRATEGY SUMMARIES

FAPH does not harbor any Virginia designated Tier I or Tier II noxious weeds. The following invasive species merit management due to their significant impacts to military training and / or native habitats.

10.4.1 AUTUMN OLIVE

Autumn olive (Figure 10-1) is a medium to large woody shrub, often reaching heights of 20 feet. Native to Asia, it was first commercially available for wildlife habitat and erosion control purposes in the 1960s; this species was recognized as an invasive species by the 1980s. Autumn olive is nearly ubiquitous at FAPH, often dominating open areas, roadsides, and wood line edges. In the absence of recurring management activities, autumn olive is frequently observed as the dominant vegetation type along power line right-of-ways and other open lands.

Figure 10-1. Autumn Olive

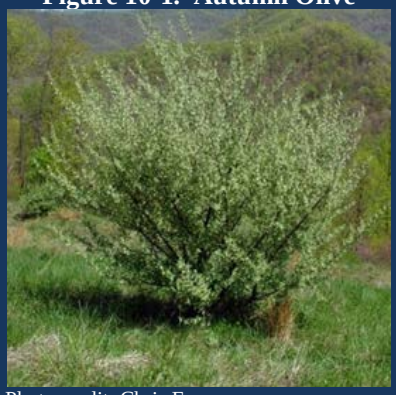

Photo credit: Chris Evans

10.4.2 JOHNSON GRASS

Johnson grass (Figure 10-2) is a perennial graminoid that is a major agricultural weed due to its propensity to form large (> 4 ft. tall) dense stands, thereby prohibiting growth of desired or native species. Native to the Mediterranean region, the rhizomatous plant is ubiquitous across Virginia, and it is most prolific along roadside edge and disturbed sites. Johnson grass appears at numerous locations across the installation albeit often in smaller (< 1 acre) concentrations.

Figure 10-2. Johnson Grass

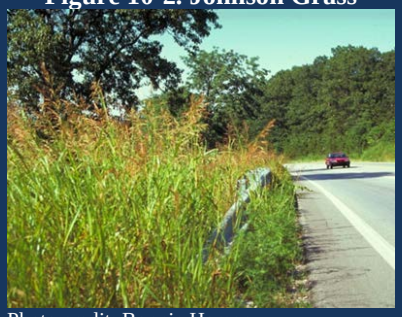

Photo credit: Bonnie Harper

10.4.3 JAPANESE KNOTWEED

Japanese knotweed (Figure 10-3) is an herbaceous perennial that can grow up to ten feet tall. Once established, the shade-intolerant plant forms dense monospecific clumps that shade out competing vegetation. It forms underground rhizomes which can reach 45 to 60 feet in length and spreads more through vegetative means than through seed. Japanese knotweed currently has a limited distribution on FAPH, which lends this species to treatments aimed to eradicate as opposed to control or limit.

Figure 10-3. Japanese Knotweed

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10.4.4 COMMON REED

Figure 10-4. Common Reed

The common reed (Figure 10-4) is a tall perennial wetland grass ranging in height from three to 13 feet. The rhizomatous plant spreads vegetatively and thrives in sunny wetland habitats, along drier borders, elevated areas of brackish and freshwater marshes, and along riverbanks and lakeshores. The species is particularly prevalent in disturbed or polluted soils found along roadsides, ditches, and dredged areas. Found throughout the temperate regions of North America, common reed is widespread in eastern Virginia and also can be found in some western areas of the state. Though native, it is strongly suspected that a non-native, aggressive strain of the species was carried to North America in the early 20th century resulting in the invasive tendency of this species. Common reed has become a biologically destructive force in Virginia wetlands, quickly displacing desirable plants species such as wild rice, cattails, and native wetland orchids.

10.4.5 TALL (MEADOW) FESCUE

Tall fescue is a coarse perennial grass that grows in dense clumps with short creeping rootstocks which form thick mats. It can be found in disturbed areas including pastures, abandoned fields, roadsides, and railroad embankments. Tolerant of a wide range of moisture conditions, it was traditionally planted for erosion control along levees and stream banks. It grows well under a variety of soil conditions, including nutrient-poor, acid soils. Introduced from Europe in the late 1800s, tall fescue is found throughout the United States and southern Canada. Marketed as Kentucky 31, it is included in many lawn seed mixtures because it is easily established and drought resistant. It is found throughout Virginia. As the density of tall fescue increases at a site, the diversity of native species declines, which affects the abundance and distribution of ground-nesting birds and rabbits. This is partly due to a natural toxin tall fescue produces to inhibit the growth of competing species. Endophyte infected fescue causes reproductive and weight loss in rabbits and deer. This thick growth often eliminates all other native species of plants, creating nearly monocultural fields of fescue. These virtually pure stands of fescue lack the necessary diversity to provide the habitat components essential for supporting a variety of wildlife species.

10.4.6 NODDING (MUSK) THISTLE

Nodding thistle (Figure 10-5) is an aggressive weed of foreign origin that occurs in open areas and roadsides. It is typically a biennial weed. Because it reproduces solely from seed, the key for successful management is to prevent seed production. Germination and seedling establishment are correlated with moisture and light. Vigorously growing grass can compete with musk thistle,

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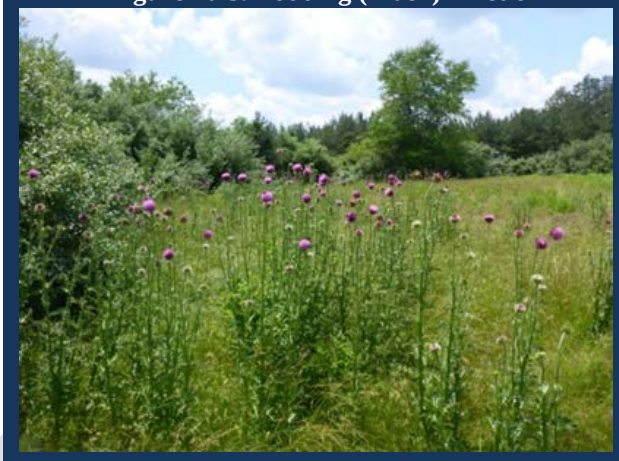
and fewer thistles occur in open areas where management is deferred. Wind and water are good dissemination methods, and seeds are also spread by animals, farm machinery, and other vehicles. Nodding thistle can be managed with mechanical and chemical control techniques. Nodding thistle will not tolerate tillage and can be removed easily by severing its root below ground with a shovel or hoe.

Mowing can effectively reduce seed output if plants are cut when the terminal head is in the late-flowering stage. Several commercially available herbicides can be used to control nodding thistle.

Figure 10-5. Nodding (Musk) Thistle



10.4.7 KUDZU

Kudzu (Figure 10-6) is a perennial, trailing or climbing vine of the legume family that readily spreads out in all directions from root crowns, with new plants beginning every one to two feet at stem nodes. This dense packing of kudzu can result in tens of thousands of plants occupying a single acre of land. During the peak growing season in early summer, this prolific vine can grow at a rate of a foot a day, easily covering and choking trees and understory vegetation. Almost any open or disturbed area is suitable habitat for this vine. Native to Japan, kudzu was brought to the southeastern United States at the turn of the century for use as a soil stabilizer, animal fodder, and ornamental vine. Due to its prolific nature and lack of natural insect or disease controls, kudzu quickly made a pest of itself and was considered a nuisance by the early 1950s. In 1970 it was listed as a common weed by the Soil Conservation Service. Throughout Virginia, kudzu stands are a common sight along roadways and bordering agricultural fields. Where it grows, kudzu has the ability to out-compete and eliminate native plant species and upset the natural diversity of plant and animal communities. It's extremely rapid growth rate and habit of growing over objects threatens natural areas by killing native vegetation through crowding and shading and can seriously stifle agricultural and timber production. In addition, although edible by many grazing animals, its viney nature makes it difficult to cut and bale, making it undesirable as a hay crop. Grazing can eliminate kudzu fields in just a few years, making them unsuitable for use as pastures except over a short time

Figure 10-6. Kudzu

Photo credit: James Miller

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period. Because of its hardy nature and lack of natural enemies, kudzu is able to colonize diverse habitats and achieve a widespread distribution.

10.4.8. OTHER SPECIES

Non-native and / or invasive species other than those listed above may also be managed if deemed a detriment to native species, communities, or the military mission.

10.5 INVASIVE SPECIES CONTROL TECHNIQUES

The DOD requires military installations to implement IPM principles and practices to ensure the management of undesirable species is conducted in a manner that minimizes the use of chemicals to the greatest extent practicable. Invasive species may be controlled using the following control mechanisms, either singly or typically in combination:

a. Manual (Physical)

b. Chemical

c. Mechanical

d. Biological

e. Landscape Manipulation

Control of invasive species requires selectivity in applied control measures to ensure management actions have the greatest amount of efficacy while operating within the constraints of the available resources. Before any invasive species are treated, baseline data (e.g., photographs, observational surveys) are collected to provide an accurate account of the infestation and aid in determining subsequent management action.

10.5.1 MANUAL CONTROL

Manual control is often the preferred method when conducted at very small populations that require minimal effort (e.g., labor, time, specialty equipment, chemicals) and/or in areas where sensitive resources (e.g., endangered plant sites) may require greater consideration of site impacts from more intensive control efforts. Manual control typically constitutes hand-pulling, weed wrenching, cutting, or girdling woody invasive plants. Because most invasive plants have extensive and aggressive root systems, complete eradication via manual control is almost impossible unless the invasive plant has just become established. Roots, tubers, rhizomes, or root crowns have to be completely extracted from the soil in order to have any success in controlling invasive plant populations with this approach. If left in the soil, these root systems will only re-

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sprout and create denser populations. In addition to re-sprout, the site disturbance resulting from manual control can create opportunities for other invasive species to establish. Once treatment has been implemented, sites should be monitored over time for additional control requirements.

10.5.2 CHEMICAL CONTROL

Herbicide applications, either exclusively or in tandem with manual or mechanical control, are often the appropriate control strategy depending on the species and site conditions. Any chemical application for the control of invasive species shall be conducted in accordance with FAPH's IPMP (Appendix I) and this INRMP. Chemical control can be applied using various treatments such as:

a. Foliar

b. Stem injection

c. Cut surface

d. Basal bark

e. Pre-emergence

Each treatment depends on the plant type (tree, shrub, or herb), infestation density, and level of selectivity. Foliar treatments can be applied using backpack sprayers, hand sprayers, all-terrain vehicle (ATV) electric pump sprayers, and high volume spray rigs (terrestrial or aerial). These treatments are chemical solutions that can be applied directly to intended targets using concentrated foliar application. Low volume applications are intended to be more selective and create less drift; high volume applications will cover more area in a given time and treat larger trees.

All pesticide application must be conducted by the DPW Pest Controller or under that office's direct supervision if chemical application is performed by a contractor.

10.5.3 MECHANICAL CONTROL

Manual control is labor intensive and is often cost-prohibitive in situations where an invasive plant is well-established and covers a large area, whereas mechanical could be accomplished with one operator and one machine. Heavy machinery, such as equipment used by ITAM (e.g., root raking dozers and shredders), are typically implemented in large restoration projects when autumn olive has impeded open range/training areas; these efforts are most effective when they are followed by chemical treatments to eradicate new growth and emergent stems. Once the

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nuisance species has been removed, the site can be prepared for replanting and restoration efforts (this may require multiple treatments).

Equipment currently in the FAPH inventory includes:

a. Skid Steer with attachments

b. Bush hogs

c. Masticator

d. Dozers with attachments

e. Tractors with attachments

f. Forestry shredders

10.5.4 BIOLOGICAL CONTROL

Biological control, or biocontrol, involves the use of living organisms to weaken, kill, or stop reproduction of targeted invasive species. Biocontrol agents can range from pathogens, nematodes, insects, fungi, fish, to larger grazing animals such as sheep and goats. Classically, biological control agents are species that originate in the native ranges where the target species occur. Prescribed grazing can be effective on large stands of terrestrial invasive plants if the vegetation is palatable to the grazing animals. Most grazing animals used in biocontrol efforts are cattle, sheep, and goats. In order to have a grazing program it is important to provide (1) good electric fencing, (2) rotating grazing sites, and (3) no grazing before grasses are three to six inches tall to ensure erosion control. Herbivorous fish may also provide a mechanism to control non-native/invasive aquatic plants. Any use of biocontrols would be conducted in accordance with all applicable federal and state laws and regulations.

10.5.5 LANDSCAPE MANIPULATION CONTROL

Landscape manipulation uses specific management techniques to manipulate the environment to reduce the population or eradicate an invasive species (e.g., prescribed fire to restore/maintain native grasslands and decrease the density of a fire-intolerant invasive species). The advantage of fire is that it is relatively inexpensive and can cover numerous acres in a relatively short amount of time. In some applications, prescribed fire acts similarly to mechanical applications in that a follow-up chemical application often ensures greater results under ideal conditions. Depending on the target species, the timing, and the intensity of the fire, prescribed burns can also kill/deplete the invasive species' seed bank. A distinct disadvantage is that some invasive

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species (e.g., Chinese privet) proliferate vigorously in response to fire disturbance; in addition, other species (e.g., autumn olive) do not readily burn.

DPW-ENRD (Forestry Branch) has the ability to manage prescribed burning and fire suppression (See Chapter 7 of this INRMP and Appendix F). Fire is most effective if the fuel load creates a hot enough fire and if the timing is correct. Normally the most effective time to burn is in the late spring when plants are exhausting stored nutrients which are used for leaf formation. Forestry branch also has use of a Terra Torch, which is a gel fuel ignition system that may be an option to control autumn olive. An application test and results monitoring need to be conducted to evaluate how beneficial this tool would be to invasive plant control.
Other potential landscape manipulations would include soil solarization using plastic sheeting, crop rotations, water draw-down in impoundment ponds, and soil cultivation.

10.6 SPECIES-SPECIFIC MANAGEMENT STRATEGIES

Invasive species control on FAPH is highly site-specific when determining if treatment is feasible and the type of treatment to apply and is typically evaluated based upon the species being considered for control, the local terrain conditions, and impact to the military mission and native species / communities. Based upon experience and FAPH's resources, species-specific management strategies have been developed for several invasive plant species (Table 10-4). However, additional types of control strategies may be necessary to control some or all of the invasive plant species depending on site-specific conditions.

Table 10-4. Invasive Species Control Strategies Typically Implemented on FAPH

Species	Control Strategy				
	Manual	*Mechanical*	*Chemical*	*Biological*	*Landscape Manipulation*
Autumn olive		X	X		X
Johnson grass			X		
Japanese knotweed			X		
Common reed			X		
Tall fescue			X		X
Nodding thistle	X	X			
Kudzu	X	X	X		

10.7 POST-TREATMENT REQUIREMENTS

Once invasive species have been controlled, the establishment of a native plant community should be the desired result. Promoting native vegetation often requires additional resource allocation (e.g., fertilizer, seedling stock) depending on species and the density of the invasive

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species treated. The objective is to establish and/or release native plant populations that will be sustainable and protect the ecological integrity of the targeted sites. Following control/eradication treatments, invasive species sites will be monitored annually to ensure the efficacy of the treatment(s) applied and to make adjustments in the management strategy if desired outcomes are not achieved.

10.8 PREVENTION OF INVASIVE SPECIES INTRODUCTIONS

As a regional training facility, FAPH experiences a significant amount of soldier throughput annually. Consequently, there is risk that an invasive species prevalent in one part of the country could be transported to and establish (via seed, egg mass, etc.) on FAPH. However, the introduction of invasive species on FAPH has not to date been attributable to Soldier activity but to historic homesteading and land disturbing activities. Nevertheless, the most effective strategy against invasive species is to prevent them from ever being introduced or established. Preventive measures typically offer the most cost-effective means to minimize or eliminate environmental and economic impacts. FAPH's prevention strategy relies on a diverse set of tools and methods, including:

a. Purchasing certified weed free products (e.g., seed mixtures, topsoil, fill material)

b. Early Detection / Rapid Response (EDRR) to prevent new occurrences from establishing[1]

c. Requiring all garrison projects (i.e. landscaping, etc.) to plant native or naturalized species

d. Promoting invasive species awareness to soldiers, installation staff, and outdoor recreationists

e. Treatment of invasive species proximal to any sensitive ecological resources (e.g., endangered species) to prevent introduction to those sensitive ecological resources

10.8 EMERGING THREATS

Due to FAPH's geographic location, proximity to federal and state transportation corridors, and the nature of FAPH as a training platform for primarily transient units, FAPH is vulnerable to potential introduction of several invasive species (Table 10-5).

[1] EDRR is the mobilization and application of resources (e.g. personnel, equipment) to a site/locality sufficient to successfully eradicate the new occurrence of an invasive species from the landscape, thereby preventing its establishment. The success of EDRR is contingent upon the isolation of the invasive species occurrence and the effectiveness of EDRR treatments.

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Table 10-5. Invasive Species at Risk for Introduction in the Vicinity of FAPH			
Scientific Name	**Common name**	**Type**	**Nearest County Occurrence**
Alliaria petiolata	Garlic mustard	Herb	Caroline, Spotsylvania, Hanover, Westmoreland, Louisa
Alternanthera philoxeroides	Alligator weed	Aquatic plant	Henrico
Ampelopsis brevipedunculata	Porcelainberry	Woody vine	Westmoreland
Dioscorea oppositifolia	Chinese yam	Herbaceous Vine	Caroline, Spotsylvania, Stafford, King George, Essex
Humulus japonicus	Japanese hops	Herbaceous Vine	King George, Stafford
Imperata cylindrica	Cogon grass	Graminoid	York
Lonicera morrowii, , L. maackii, L. x bella	Bush honeysuckles	Woody shrub	King George, Hanover, Louisa, Spotsylvania, Henrico
Lythrum salicaria	Purple loosestrife	Aquatic plant	Hanover, Louisa, Spotsylvania, Prince William, Fauquier
Myriophyllum aquaticum	Parrot feather	Herb	King George, Essex, Hanover
Myriophyllum spicatum	Eurasian milfoil	Herb	Stafford, King George, Westmoreland
Persicaria perfoliata	Mile-a-minute vine	Vine	Stafford, Hanover
Ficaria verna	Lesser celandine	Herb	Fairfax, Arlington
Agrilus planipennis	Emerald ash borer	Insect	Caroline, Stafford
Geosmithia morbida	Thousand cankers disease	Fungus	Henrico, Richmond
Solenopsis spp.	Fire ants	Insect	James City, York
Channa argus	N. snakehead	Fish	Spotsylvania
Sirex noctilio	Wood wasp	Insect	None

10.9 INVASIVE SPECIES AWARENESS TRAINING

Invasive species are not always prevented from establishing populations in new areas even with the best prevention practices. Therefore, resources are dedicated to EDRR of new and emerging threats. EDRR is highly successful in controlling invasive species while invasives are localized and the level of the infestation is not beyond containment and complete eradication. Therefore, it is essential that all field staff have a working knowledge of EDRR. Through awareness training FAPH staff can educate field personnel on the threats of invasive species, their identification, reporting techniques, and rapid assessment and response methods.

FAPH shall utilize its SEMS processes to ensure installation staff, tenants, and trainers understand the threats that invasive species pose to the installation and which species are at risk

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for establishment on FAPH. This is accomplished through species familiarization mechanisms and education on prevention methods and protocols implemented by the Army and FAPH.

10.10 SUPPORTING ACTIONS AND PROJECTS

The following actions and projects have been identified for implementation to manage invasive species on FAPH in accordance with this all applicable federal and state laws, regulations, and directives, this INRMP and the installation IPMP.

Table 10-6. FY16-20 INRMP Actions and Projects for Invasive Species Management

FY	Project Name	Project Description
Annual (FY16-20)	Japanese Knotweed Control	Chemical and mechanical control of Japanese Knotweed along U.S. Route 301 and TA24
Annual (FY16-20)	Johnson Grass Control	Control Johnson grass at all selected locations
Annual (FY16-20)	Reclaim Open Areas	Mechanically control of autumn olive at all selected locations
Annual (FY16-20)	Kudzu Control	Mechanical and chemical control of kudzu at all selected locations
Annual (FY16-20)	Invasive Species Awareness Training	Conduct invasive species awareness training
Annual (FY16-20)	Invasives Mapping	Develop/update requirements and capabilities to map invasive species occurrence sites
Annual (FY16-20)	Oriental Bittersweet Control	Eradicate oriental bittersweet from TA09
Annual (FY16-20)	Wisteria Control	Identify Asiatic wisteria control strategies best suited for implementation on FAPH
Annual (FY16-20)	Nodding Thistle Control	Monitor thistle sites treated in FY13-14; implement control methods as appropriate
Annual (FY16-20)	Hydrilla Control	Monitor Hydrilla control efforts
16	White mulberry eradication	Mechanical and chemical control to eradicate a lone occurrence of white mulberry (one site)
19	Bamboo eradication	Mechanical and chemical treatment of giant bamboo (one site)

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11.0 AGRICULTURAL OUTLEASE COMPONENT PLAN

11.1 INTRODUCTION

The Army uses an integrated ecosystem management approach to manage land, air, water, soil, terrestrial, and aquatic resources. This policy supports multiple-use activities, which include agriculture outleasing when compatible with the mission and long-term ecosystem management goals. All agricultural outleases at FAPH are authorized if they are conducted in a manner as to not impact the military mission. Secondary benefits in cost avoidance for mowing and land management often accompany outlease agreements.

The Army's outlease program goals are to:

a. Ensure proper management and use of real property for mission purposes

b. Promote multiple uses of Army lands

c. Minimize additional real property acquisition

d. Reduce maintenance and custody costs

e. Dispose of real property interests that are no longer required for Army needs

f. Reduce Army management responsibilities

All agricultural outleasing implemented on FAPH shall comply with all applicable laws, regulations, directives, and guidance (Table 11-1).

The temporary nature of outleasing makes it an excellent technique for supplementing the installation's capabilities in maintaining open areas. If FAPH requires increased use and accessibility to the leased land in the future, then the leases can be modified or revoked. The services performed by the lessee benefit the installation without additional expenditures. Additionally, FAPH has benefitted from its outlease program through improved public relations with local farmers, improved wildlife food sources, and receipt of supplemental funds from the DOD's Reimbursable Program.

FAPH is currently outleasing 162 acres for agricultural purposes. As a result of a sealed-bid process, a private citizen is granted a lease to plant row crops on a 62 acre tract along U.S. Route 17 at Cooke Camp. The lessee may plant row crops, produce hay, or perform maintenance mowing on an additional 100 acre tract along the south and east boundaries and Enon Church firebreak. During the term of this lease, this individual is solely responsible for maintaining the premises in good order and condition. Responsibilities include all grounds maintenance as well

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as ensuring all environmental requirements are met. All liabilities related to pollution of the area from spills and groundwater/surface water contamination, and all health and safety issues, lie with the private individual. Field crops are grown employing agricultural practices similar to those used throughout Virginia (i.e., a two-year crop cycle). Crop height is generally 2 to 6.5 feet (0.6 to 2.0 m).

The terms of the agricultural outlease on Army properties require the lessee to manage for the prevention of introduction and spread of invasive species. Outgrant agreements will include requirements to implement control measures for invasive species that are identified in this INRMP (Chapter 10). Proceeds generated from outlease agreements are deposited into a reimbursable account that serves as a potential source of funding for natural resources projects.

Table 11-1. Laws, Regulations, Directives, and Guidance applicable to Agricultural Outlease

Federal
Leases: Non-excess property of military departments (10 U.S.C. Sec. 2667 / 32 CFR 623, 643, 736)
Clean Water Act, *as amended* (33 U.S.C. Sec 1251 et seq. / 33 CFR 320-332; 40 CFR 22, 231-232, 332)
Federal Noxious Weed Act (7 U.S.C. Sec. 2801, 2814)
Noxious Weed Control and Eradication Act (7 U.S.C. 7781, *as amended* / 20 CFR 408)
Plant Protection Act, *as amended* (7 U.S.C 7701 / 7 CFR 300-380)
Non-indigenous Aquatic Nuisance Prevention and Control Act (16 U.S.C. Sec 4701)
Federal Insecticide, Fungicide, and Rodenticide Act, *as amended* (7 U.S.C. Sec. 136 et seq. / 19 CFR 12; 29 CFR 1440; 40 CFR 3, 9, 22, 30, 31); 40 CFR 32, 34, 35, 152, 153, 155, 156, 158, 159, 162, 165-168, 174, 451
Resource Conservation and Recovery Act, *as amended* (42 U.S.C. Sec. 6901 et seq. / 40 CFR 3, 9, 30, 31, 34, 35, 40, 124, 144-148, 233, and 451)
Emergency Planning and Community Right to Know Act (42 U.S.C Sec. 11004 et seq. / 40 CFR 350-372)
Animal Damage Control Act (7 USC Sec. 426)
The Sikes Act, *as amended* (16 U.S.C. Sec. 670 et seq. / 32 CFR 190)
Endangered Species Act, as amended (16 U.S.C Sec. 3371 et seq. / 50 CFR 402)
The National Historic Preservation Act, *as amended* (16 U.S.C. 470 et seq. / 18 CFR 380.14)
National Environmental Policy Act (42 U.S.C. 4321 et seq. / 32 CFR 651; 775)
Executive Order 13508 – *Chesapeake Bay Protection and Restoration* (74 Fed. Reg. 23099)
Executive Order 13693 – Planning for Federal Sustainability in the Next Decade (80 Fed. Reg. 15871)
DOD
Defense Finance Accounting Service – Indianapolis Regulation 37-1, *Finance and Accounting Policy Implementation*, Chapter 14, "Sales and Revenues," (June 2004)
Department of Defense Financial Management Regulation 7000.14-R, Volume 11A, Chapter 16 (August 2002)
DOD Instruction 4715.03 - *Natural Resource Conservation Program*

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DOD (con't.)
DOD Instruction 4150.7 – DOD *Pest Management Program*
Conserving Biodiversity on Military Lands: *A Guide for Natural Resource Managers*
U.S. Army
Army Regulation 200-1 - *Environmental Quality: Environmental Protection and Enhancement*
Army Regulation 405-80 - *Management of Title and Granting Use of Real Property*
Army Regulation 405-90 - *Disposal of Real Estate*
Army Regulatory Guidance: *Reimbursable Agricultural/Grazing and Forestry Programs*
Army Memorandum – Policy Guidance for Pest Management Services on Agricultural Out-leases
Fort A.P. Hill
Integrated Pest Management Plan (Appendix I)
Integrated Cultural Resources Management Plan (Appendix D)
Nutrient Management Plan
Commonwealth of Virginia
Virginia State Water Control Law (§§ VA. CODE ANN. 62.1-44.2 to -44.33:28 / 9 VAC 25, 31, 830, 840, 870)
Virginia Fertilizer Law (§§ VA. CODE ANN. 3.2-3600 to -3625)

11.2 ROLES AND RESPONSIBILITIES

The USACE, Norfolk District administers the outlease agreement and monitors the property for adherence to the terms of the lease. The USACE is responsible for collecting the license fees and forwarding those funds to the U. S. Treasury to be deposited into the Army account established for the purpose of redistribution to the outleasing program management of grazing and agriculture on military lands.

FAPH's Garrison Commander maintains direct jurisdiction over the leased property and will be responsible for designating all government representatives at FAPH.

The designated installation Natural Resources Specialist is the FAPH technical representative to the USACE for the outlease agreement, and is responsible for supporting the USACE representative. The designated Natural Resource Specialist performs supplemental inspections of site conditions and coordinates with the lessee and installation program managers. The installation Natural Resources Specialist also submits annual funding requests for disbursement of outlease generated funds from the Army account for outleasing and grazing to be used for other natural resources projects.

The installation's Pest Management Coordinator is responsible for ensuring that all applicable policies and requirements pertaining to pesticide use on FAPH are incorporated into the lease

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agreement and reporting the total amount of pesticides used by the lease annually in all applicable Army reporting procedures for pesticide use.

The installation Water Quality Program lead is responsible for ensuring that applied pesticides on leased lands conform to all permit requirements and that soil erosion practices are implemented in conformance with installation requirements.

11.3 MANAGEMENT OBJECTIVES

The primary management objective for FAPH's outleasing is to leverage non-installation resources (e.g., personnel, equipment) to reduce maintenance costs for select open areas. FAPH deflects significant resource requirements through outlease of its 162 acres to a private citizen. The outlease areas also serve as a low-fuels fire break along the perimeter of the installation in the event of wildfires emanating from the live-fire range complex.

Table 11-2. INRMP Goals, Objectives, and Performance Measures accomplished by the Agricultural Outlease Program (in bold)

Goal	Objective(s)	Performance Measure(s)
1.0 Sustainably manage the Army's natural resources to support Mission requirements	1.1 Coordinate with military land users to identify Mission requirements	(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)
	1.2 Sustainably manage habitats to meet doctrinal training requirements	(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned **(3) % of Open Areas in prescription** (4) Deer density (per mi^2) (5) WASH Plan (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities	(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR (5) Open area condition (6) Annual updates to Hunting and Fishing Regulations
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	(1) Outreach events (2) Recreation Safety (3) Public wildlife viewing opportunities

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Table 11-2. INRMP Goals, Objectives, and Performance Measures accomplished by the Agricultural Outlease Program (in bold)		
Goal	**Objective(s)**	**Performance Measure(s)**
	2.3 Implement activities that mutually benefit installation natural resources management and the community	(1) Recreational user Satisfaction (2) Recreational user trends
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity	(1) Population indices (2) Suitable habitat (acres) (3) Sufficient no. of adequately trained CLEOs
	3.3 Manage invasive species to limit impacts to native habitats	(1) Treatment / Control (% of occurrence sites) (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials

11.3.1 GENERAL OUTLEASE CONSIDERATIONS

Specific terms and conditions associated with any outlease are codified in the lease agreement between FAPH and the lease as administered by the USACE. However, general provisions of any lease agreement include the following to ensure integration with this INRMP and consistency with the military mission of FAPH:

a. A conservation plan shall accompany all outlease agreements to ensure that biodiversity, soil, and water conservation are included in on-site practices in accordance with all applicable federal and state laws, regulations, and directives, this INRMP, and FAPH's IPMP.

b. The government reserves the right of concurrent use for military training purposes.

c. Weeds and brush shall be controlled on all tracts by cutting or, alternatively, spraying with an herbicide in accordance with FAPH's IPMP (Appendix I).

d. Noxious weeds and invasive plant species (e.g., nodding thistle, Johnson grass) shall be controlled, before seed heads emerge, each year of the lease by use of mowing or chemicals; in accordance with FAPH's IPMP (Appendix I).

e. The lease contract does not, in any way, give the lessee permission to take, hunt, trap or fish any of the wildlife on their leased or other installation areas. All leased areas are subject to concurrent use for recreational purposes, including hunting, by such persons

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accorded the privilege by appropriate regulations established by the Garrison Commander.

f. No open burning or the use of fires shall be allowed; all combustible trash and waste material shall be disposed of regularly.

g. Containers of flammable liquids shall be of an approved type. Flammable liquid drippings shall be disposed of promptly. Gasoline spills shall be disposed of in accordance with federal, state, and local regulations. Chemical spills over ten gallons shall be reported to FAPH officials.

h. The use of gasoline to clean or wash repair parts is prohibited; only approved solvents shall be used for this purpose.

i. No aerial pesticide applications shall be allowed.

j. Row crop fields with no height restrictions (unrestricted) shall be in a corn/soybean rotation. Height restricted fields will be in a milo/soybean rotation.

k. Hay tracts shall be seeded with acceptable hay-type crops as defined; orchard grass, alfalfa, native lespedeza, clovers, or warm season grasses native to this area. No tall fescue (e.g. KY-31) is to be allowed due to its invasive nature. Only grass seed produced incidentally to the production of hay may be harvested.

l. Avoid fieldwork (planting, spraying or harvesting) when ground is saturated in order to minimize rutting. Ruts in excess of 12 inches deep will require remediation.

11.3.2 SUMMARY

Agricultural outleasing provides an alternative mechanism for FAPH to meet land management requirements without incurring additional expense, realizing cost avoidance, and without encumbrances to the military mission.

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12.0 WATERSHED MANAGEMENT

12.1 INTRODUCTION

FAPH's watershed management is an integrated, inclusive strategy that effectively protects and manages water quality and quantity resources, in addition to achieving broader environmental protection objectives. It accomplishes this by using naturally defined hydrologic units (the watershed) as the integrating management unit. For a given watershed, the approach encompasses more than just the water resources, such as a stream, pond, wetland, or aquifer. It encompasses all the land from which water drains to the resource (Figure 12-1). The watershed approach places emphasis on all aspects of water quality: physical (e.g., temperature, flow, mixing, habitat), chemical (e.g., conventional and toxic pollutants such as nutrients and pesticides), and biological (e.g., health / integrity of biotic communities).

Figure 12-1. The Water Cycle

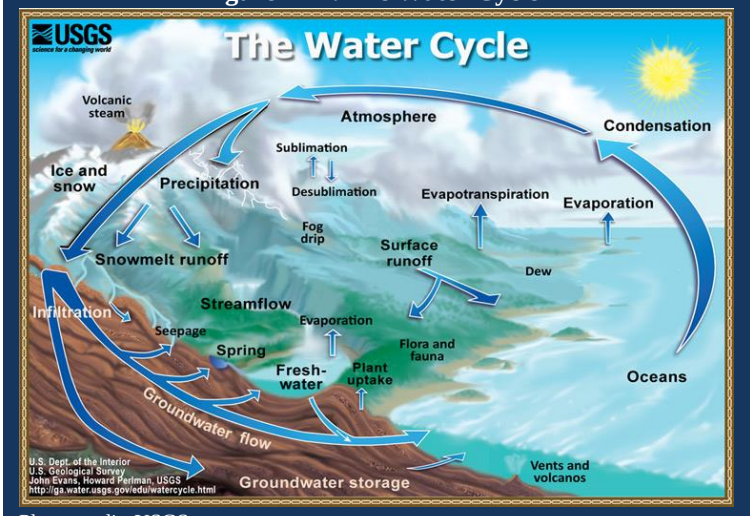


Photo credit: USGS

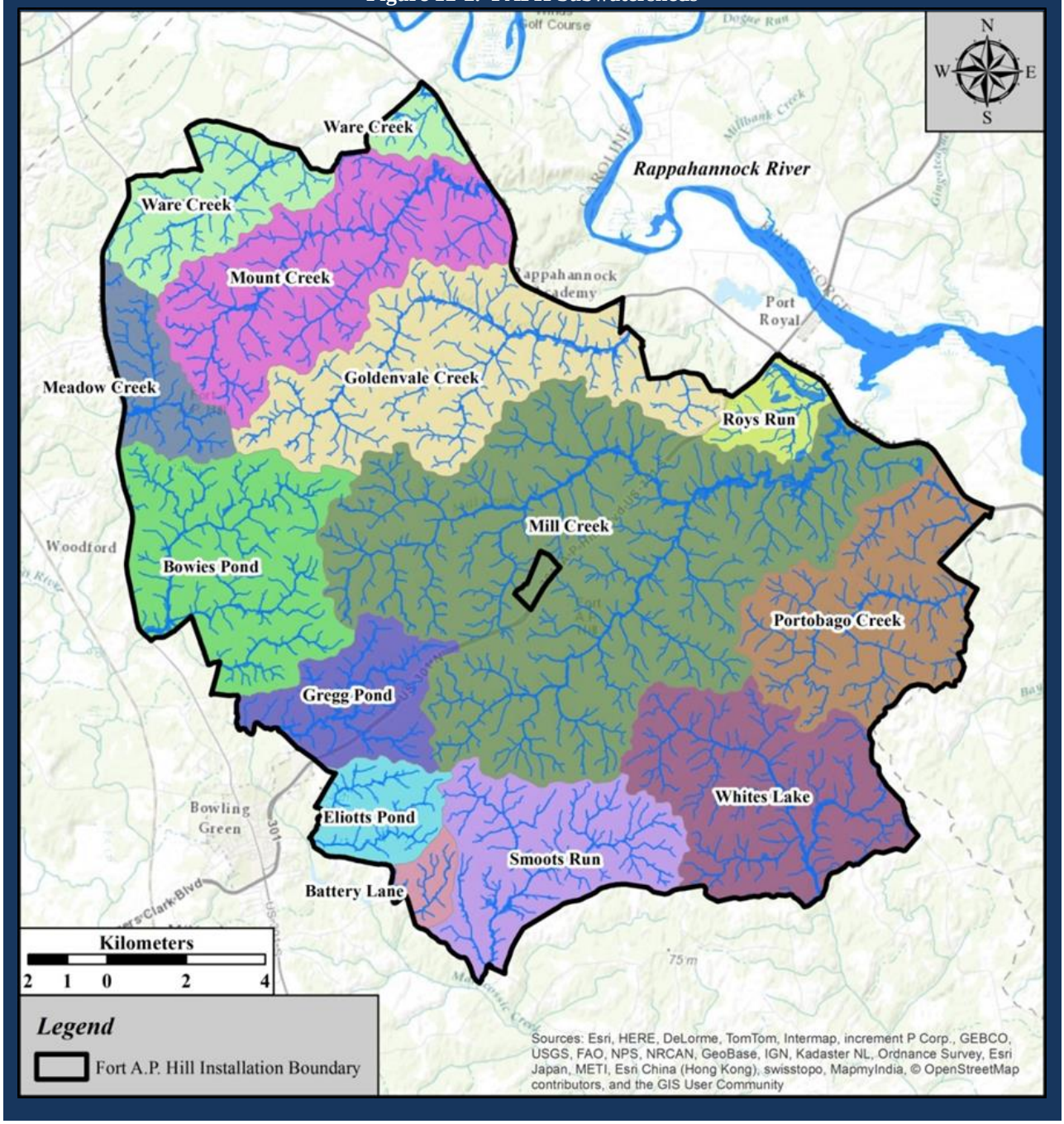
FAPH harbors approximately 600 miles of intermittent and perennial streams, and more than 6386 acres of wetlands. Comprised of 50 smaller subwatersheds, the Chesapeake Bay is the largest estuary in the world and is considered a national treasure. Its deteriorating water quality has prompted federal and state regulatory actions pertaining to land use and land development. FAPH's location within the Chesapeake Bay Watershed has a significant influence on how the installation manages these aquatic resources in fulfillment of the military training mission.

The jurisdictional boundary of FAPH spans the Lower Rappahannock River watershed (HUC 02080104) the Mattaponi River watershed (HUC 02080105).

FAPH contains thirteen subwatersheds: Battery Lane, Bowies Pond, Roys Run, Elliott's Pond, Goldenvale Creek, Gregg Pond, Meadow Creek, Mill Creek, Mount Creek, Portobago Creek, Smoots Run, Ware Creek, and Whites Lake. These sub-watersheds drain an estimated 74,649 acres of the 75,794 acres within the installation. The remaining 1,145 acres are divided into small areas throughout FAPH that drain into watersheds outside the installation (Figure 12-2). The location of FAPH along the drainage divide between the Lower Rappahannock River watershed to the north and the Mattaponi/York River watershed to the south generally limits

most FAPH water bodies and watersheds from being impacted by pollutants from upstream sources.

Figure 12-2. FAPH Subwatersheds



FAPH's Watershed Management Plan (WMP) was updated in 2012. The updated WMP was prepared to comply with Federal, State, Local, DOD, Army, and installation policy, regulations and plans. For the 2012 update, two large scale analyses of the FAPH watersheds were used that are based on land use/cover and base activities. The first analysis was a watershed inventory and vulnerability assessment. The first part of this analysis involved completing a Watershed Inventory for Vulnerability Assessment (WIVA), which is a GIS-based integration of specific natural watershed characteristics and land use/cover for the FAPH watersheds to develop a series of metrics or variables on the health and stresses affecting the watersheds. This inventory was then used to complete a vulnerability assessment of each FAPH watershed that generally followed the U.S. Environmental Protection Agency (EPA) Regional Vulnerability Assessment (ReVA) Program, which was developed to assess the regional vulnerability of ecosystems by identifying and understanding potential stressors to ecological systems.

Table 12-1. Laws, Regulations, Directives, and Guidance applicable to Watershed Management
Federal
The Clean Water Act, *as amended* (33 U.S.C Sec. 1251 et. seq.)
Safe Drinking Water Act, *as amended* (42 U.S.C Sec. 300f et seq.)
Coastal Zone Management Act, *as amended* (16 U.S.C Sec. 1451 et. seq.)
Energy Independence Security Act (42 U.S.C Sec. 17094)
Executive Order 11988, *as amended – Floodplain Management* (Fed. Reg. 26951)
Executive Order 11990, *as amended – Protection of Wetlands* (Fed. Reg. 26961)
Executive Order 13508 – *Chesapeake Bay Protection and Restoration* (Fed. Reg. 23099)
Executive Order 13693 – *Planning for Federal Sustainability in the Next Decade* (80 Fed. Reg. 15871)
U.S. Environmental Protection Agency – *Chesapeake Bay Total Maximum Daily Loads*
Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management (65 FR 62565-62572)
DOD
DOD Instruction 4715.06 – *Environmental Compliance in the United States*
DOD Chesapeake Bay Strategic Action Plan
U.S. Army
Army Regulation 200-1 – *Environmental Quality: Environmental Protection and Enhancement*
U.S. Army Chesapeake Bay Strategy
Army Sustainable Design and Development Policy Update (16 December 2013)
Fort A.P. Hill
Regulation 200-1 - *Environmental Requirements*

Table 12-1. Laws, Regulations, Directives, and Guidance applicable to Watershed Management
Fort A.P. Hill (con't.)
Watershed Management Plan
Soil Erosion & Sediment Control Stormwater Management Plan
Nutrient Management Plan
Stormwater Best Management Practices and Landscape Maintenance Plan
Water Quality Program Requirements
Wetland Program Requirements
Commonwealth of Virginia
Virginia State Water Control Law (§§ VA. CODE ANN. 62.1-44.2 to -44.33:28 / 9 VAC 25, 31, 830, 840, 870)
Virginia Forestry's Best Management Practices for Water Quality
Virginia Coastal Zone Management Program

The second analysis is a Watershed Impact Assessment (WIA), as specified in The *Department of Defense Installation Watershed Impact Assessment Protocol* (DOD Protocol) (DOD 2005). This protocol provides installations with a series of spreadsheets to identify activities that occur within the installation and to assess the potential impact of those activities on water quality and other resources within the surrounding watershed. The WIVA/vulnerability assessment and WIVA methods and results are presented in Section 5.0 and Section 6.0 of the WMP (Appendix H).

12.2 ROLES AND RESPONSIBILITIES

The FAPH ENRD Chief is responsible for ensuring that all activities conducted on FAPH are evaluated to ensure compliance with all applicable laws, regulations, directives, executive orders, and guidance.

The FAPH DPW-ENRD Compliance Branch (Water Quality Program) is responsible for conducting watershed assessments, inspections, and performing reviews of all activities to ensure work orders, projects, actions, and activities comply with all applicable laws, regulations, directives, executive orders, and guidance.

Projects and activities are reviewed by ENRD through the DPW Work Order and NRSA processes to determine if the proposed actions have the potential to disturb soil and water. If a potential impact is suspected, ENRD then assesses the proposed activity and identifies all applicable compliance, best management practices, and mitigation requirements.

12.3 MANAGEMENT GOALS AND OBJECTIVES

The WMP supports several INRMP goals, objectives, and performance measures (Table 12-2).

These are:

a. Assist FAPH in maintaining compliance with applicable laws, regulations, executive orders, directives, and guidance.

b. Provide a baseline vulnerability and impact assessment of the 13 subwatersheds to identify and assess where watershed problems exist or are likely to occur in the future, and the environmental stresses of concern.

c. Implement an adaptive management strategy and associated best management practices for sustainable watershed management.

d. Provide a screening tool to evaluate the potential effect of various management decisions on the watershed resources and assist future planning in support of the training mission.

Table 12-2. INRMP Goals, Objectives, and Performance Measures accomplished through Watershed Management (in bold)

Goal	Objective(s)	Performance Measure(s)
1.0 Sustainably manage the Army's natural resources to support Mission requirements	**1.1 Coordinate with military land users to identify Mission requirements**	**(1) Recurring Coordination Meetings** **(2) Long-range vegetation management requirements (i.e., Missionscape Plan)**
	1.2 Sustainably manage habitats to meet doctrinal training requirements	(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned (3) % of Open Areas in prescription (4) Deer density (per mi^2) (5) WASH Plan (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	**(1) Partnerships** (2) Innovations (3) Acres Preserved

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2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	**2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities**	**(1) Biological/User Surveys** (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR (5) Open area condition (6) Annual updates to Hunting and Fishing Regulations
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	(1) Outreach events (2) Recreation Safety (3) Public wildlife viewing opportunities
	2.3 Implement activities that mutually benefit installation natural resources management and the community	(1) Recreational user Satisfaction (2) Recreational user trends
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	**3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.**	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity	**(1) Population indices (2) Suitable habitat (acres) (3) Sufficient no. of adequately trained CLEOs**
	3.3 Manage invasive species to limit impacts to native habitats	(1) Treatment / Control (% of occurrence sites) **(2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials**

12.4 LAND USE POLLUTION ABATEMENT

Land disturbing activities that have the potential for causing soil erosion and adversely affecting water quality and quantity are regulated by both Federal and State laws and regulations (Table 14-1). The Virginia Erosion and Sediment Control Law, Virginia Stormwater Management Act, Energy Independence Security Act (EISA) Section 438, and Chesapeake Bay Preservation Act establish compliance standards for the mitigation of soil disturbances associated with regulated land disturbing activities.

Land disturbing activities are manmade changes to the land surface that have the potential to change its runoff characteristics including clearing, grading, or excavation (9 VAC25-870-10). A Chesapeake Bay Preservation Act land disturbing activity applies to land disturbing activities that result in a land disturbance greater than or equal to 2,500 square feet and less than one acre in all areas of jurisdictions designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC25-870-100). FAPH uses the NEPA process to evaluate actions that could cause soil disturbances and requires planned mitigation measures and compliance for these activities, in accordance with these laws.

Land disturbing projects are required to be designed and constructed in accordance with the Virginia Erosion and Sediment Control Law and Regulations, the Virginia Stormwater Management Act, EISA Section 438, and the Chesapeake Bay Preservation Act. See below for land disturbance plan and permit requirements:

Land Disturbing Requirements:

1. Projects with a land disturbance greater than 2,500 square feet are required to have an Erosion & Sediment Control Plan.

2. Projects with a land disturbance greater than 2,500 square feet and less than one acre are required to have an Erosion & Sediment Control Plan and Stormwater Management (SWM) Plan.

    a. EISA Section 438 compliance is required for projects that have a facility footprint (new development or redevelopment) greater than 5,000 square feet. EISA Section 438 compliance requirements shall be integrated into the SWM Plan.

3. Projects with a land disturbance greater than one acre are required to have a Stormwater Pollution Prevention Plan (SWPPP) and a Virginia Stormwater Management Program (VSMP) permit.

Permit and Plan Requirements:

Land disturbing projects requiring an Erosion & Sediment Control Plan shall be designed and implemented in accordance with *The Virginia Erosion and Sediment Control Handbook*, Third Edition, 1992. This approved handbook is used to set minimum criteria, standards, and guidelines. Erosion and Sediment Control concerns are addressed by requiring the designer to provide a complete site specific Erosion and Sediment Control Plan. Modifications to state standard practices or innovative erosion control best management practices may also be employed, but must be thoroughly described to the satisfaction of ENRD. This plan is submitted to the ENRD Water Quality Program Manager for preliminary review and approval. Final regulatory approval of the plan will be provided by the Virginia Department of Environmental Quality (DEQ). Inspection and compliance verification of specific land disturbing projects are accomplished by ENRD in coordination with the appropriate authorized government official.

An Erosion and Sediment Control Plan is a document that describes the potential for erosion and sedimentation for a specific land disturbing project. The plan must also explain and illustrate the measures that will be taken to control erosion and sedimentation. While it is prudent to include the erosion and sediment control standards and specifications in contract documents, the erosion and sediment control plan itself should be a separate, living document that is updated with notes

regarding controls that are installed, inspected, and maintained. Site inspections are made regularly or in accordance with the VSMP permit and SWPPP to ensure integrity and functionality of all vegetative and structural controls.

An Erosion and Sediment Control Plan must contain sufficient information to convey to the plan approving authority (DEQ) that the problems of erosion and sedimentation have been adequately addressed for a proposed project. The length and complexity of the plan should be commensurate with the size of the project, the severity of site conditions, and the potential for off-site impacts. Special consideration should be paid to projects that are directly adjacent to surface waters, developed areas, or areas of special significance (e.g. proximal to endangered species, surface waters, and wetlands).

Projects requiring a SWM Plan shall be designed and implemented in accordance with the Virginia Stormwater Management Act technical criteria. The plan must apply the appropriate technical criteria to the entire land disturbing activity and consider all sources of surface runoff including subsurface flows converted to surface runoff. The plan shall include the following elements:

a. Information on the type of and location of stormwater discharges, information on the features to which stormwater is being discharged

b. Complete contact information

c. Complete project narrative

d. General description of the proposed stormwater management facilities and mechanism demonstrating how operations and maintenance will be provided post construction

e. Detailed information of the proposed stormwater best management practices; BMPs shall be designed and constructed in accordance with Low Impact Development (LID) and Leadership in Energy and Environmental Design (LEED) green infrastructure requirements.

f. Hydrologic and hydraulic calculations, including runoff characteristics

g. Documentation and calculations verifying compliance with the water quality and quantity requirements

h. Detailed project maps showing (topography, drainage areas, surface waters, wetlands, and floodplains).

i. Record drawings for the plan must be appropriately sealed and signed by a professional registered in Virginia.

Projects requiring EISA Section 438 compliance shall be designed and integrated into the SWM Plan. EISA Section 438 states that all federal facility projects with a footprint greater than 5,000 square feet must maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.

Projects requiring a SWPPP shall be developed and implemented in accordance with Virginia Stormwater Management Act technical criteria. The SWPPP is the corner stone of stormwater management and permit compliance. The SWPPP shall be amended whenever there is a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants from the project site. A complete SWPPP shall contain the following:

1. Approved Erosion & Sediment Control Plan

2. Approved Stormwater Management Plan (integrating EISA Section 438 requirements)

3. Pollution Prevention Plan (P2 Plan)

4. Plan specifying any additional control measures to meet the requirements of Total Maximum Daily Loads (TMDL) if applicable.

5. Fort A.P. Hill's Environmental Handbook as amended

Projects requiring a VSMP permit (construction general permit) shall first obtain ENRD preliminary approval and DEQ regulatory approval on the Erosion & Sediment Control Plan and SWM Plan. After plan approval, the VSMP permit registration statement is completed and permit fee submitted to DEQ.

12.5 POINT SOURCE POLLUTION ABATEMENT

The Clean Water Act (CWA) defines a point source as, "any discernable, confined and discreet conveyance, from which pollutants are or may be discharged". Point source pollution comes from industrial and sewage treatment plants, often via a discharge pipe, as well as stormwater conveyance systems. FAPH uses the Virginia Pollution Discharge Elimination System (VPDES) as the regulations for point source and non-point source pollution abatement and compliance. FAPH has three permits, one stormwater industrial permit for the Bulk Petroleum,

Oil, and Lubricant (POL) Facility, one general permit for discharges resulting from the application of pesticides to surfaces waters of Virginia, and one general permit for vehicle wash and laundry facilities for the Central Vehicle Wash Facility (CVWF).

a. Bulk POL Facility, Stormwater Industrial Permit # VAR051092

b. CVWF, General Permit # VAG750219

c. Pesticides, General Permit # VAG87

American Water O&M, Inc. (AW) is the current contract utility provider that owns and operates FAPH's wastewater collection and treatment systems. AW operates and maintains the wastewater collection and treatment systems in accordance with federal, state, and local laws and regulations. AW has three VPDES permits, two for the Wilcox Wastewater Treatment Facility (WWTP) and one Virginia Pollution Abatement Permit (VPA) for the Cooke Camp WWTP (spray irrigation system).

a. Wilcox WWTP Permit # VA0032034

b. Wilcox WWTP General Permit # VAN020035

c. Cooke Camp VPA Permit # VPA00008

12.6 NON-POINT SOURCE POLLUTION ABATEMENT

Non-point source pollution comes from many sources and is caused by stormwater runoff moving through and over the ground's surface in sheet runoff, sometimes picking up harmful toxics, excess nutrients, and sediments as it travels. These pollutants are then deposited into lakes, rivers, wetlands, coastal waters, and underground water supplies. Non-point source pollution can be difficult to detect since it arises from diffuse sources. This characteristic makes this kind of pollution hard to control. The following management plans are used to help minimize nonpoint source pollution from activities on FAPH:

a. Watershed Management Plan

b. Nutrient Management Plan

c. Soil and Erosion & Sediment Control and Stormwater Management Plan

d. Stormwater BMPs and Landscape Maintenance Plan

e. Integrated Pest Management Plan

Examples of activities and management controls to help minimize or eliminate nonpoint source pollution:

a. Turf management chemicals are applied *minimally* and in conformance with the Fort A. P. Hill Nutrient Management Plan. In addition to fertilizers, other turf maintenance chemicals applied include fungicides and insecticides. These chemicals are applied in accordance with the FAPH's approved IPMP.

b. Onsite wastewater treatment systems (septic tank drain field systems) are operated, inspected, and maintained to prevent the discharge of pollutants to surface and ground waters and, to the extent practicable, reduce the discharge of pollutants into ground waters that are hydrologically connected to surface waters.

c. Dry chemicals (bags of fertilizer, snow melt) are kept in storage to prevent exposure to the weather. This BMP eliminates any potential stormwater runoff concerns that may exist if the bulk materials were stored outside exposed to the weather.

12.7 DRINKING WATER

Drinking water for FAPH comes from the Aquia, Middle, and Lower Potomac aquifers underlying the installation.

AW is the current contract utility provider that owns and operates FAPH's drinking water treatment, storage, and distribution systems. AW operates and maintains the water system in accordance with federal, state, and local laws and regulations. AW's overall operational strategy is to maintain regulatory compliance, produce and deliver safe drinking water, implement water conservation and sustainable practices in support of FAPH's training mission.

12.8 HYDROLOGY

12.8.1 SURFACE WATER RESOURCES

FAPH has 130 impoundments and beaver ponds totaling more than 790 acres. The largest impoundments include Upper Travis Lake, Lower Travis Lake, Bowies Pond, Buzzards Roost Pond, Laser Range Pond, Beaver Dam Pond, Maxey Gregg Pond, Upper Delos Lake, Smoots Pond, and White Lake. The water quality within the impoundments is typical for similar waters within the coastal plain, exhibiting slightly acidic, tannin-stained water with low buffering capacity.

Drainage patterns within the installation are dendritic on the gently sloping topographic areas, and trellis in the more deeply incised areas. The major streams within FAPH which drain to the Mattaponi River are Meadow Creek, Turkey Track Creek, Cattlet Creek, Reynolds Run, Maracossic Creek, Smoots Run, Beverly Run, Mashbox Run, and Shady Grove Run. The major streams of that drain into the Rappahannock River watershed are Ware Creek, Mount Creek, Goldenvale Creek, Peumansend Creek, Portobago Creek, and Mill Creek. The watersheds of these streams are located largely within the installation's boundaries. The headwaters of the onsite streams are formed by groundwater discharges from shallow aquifers. These discharges commonly create wetlands that are locally referred to as seepage swamps.

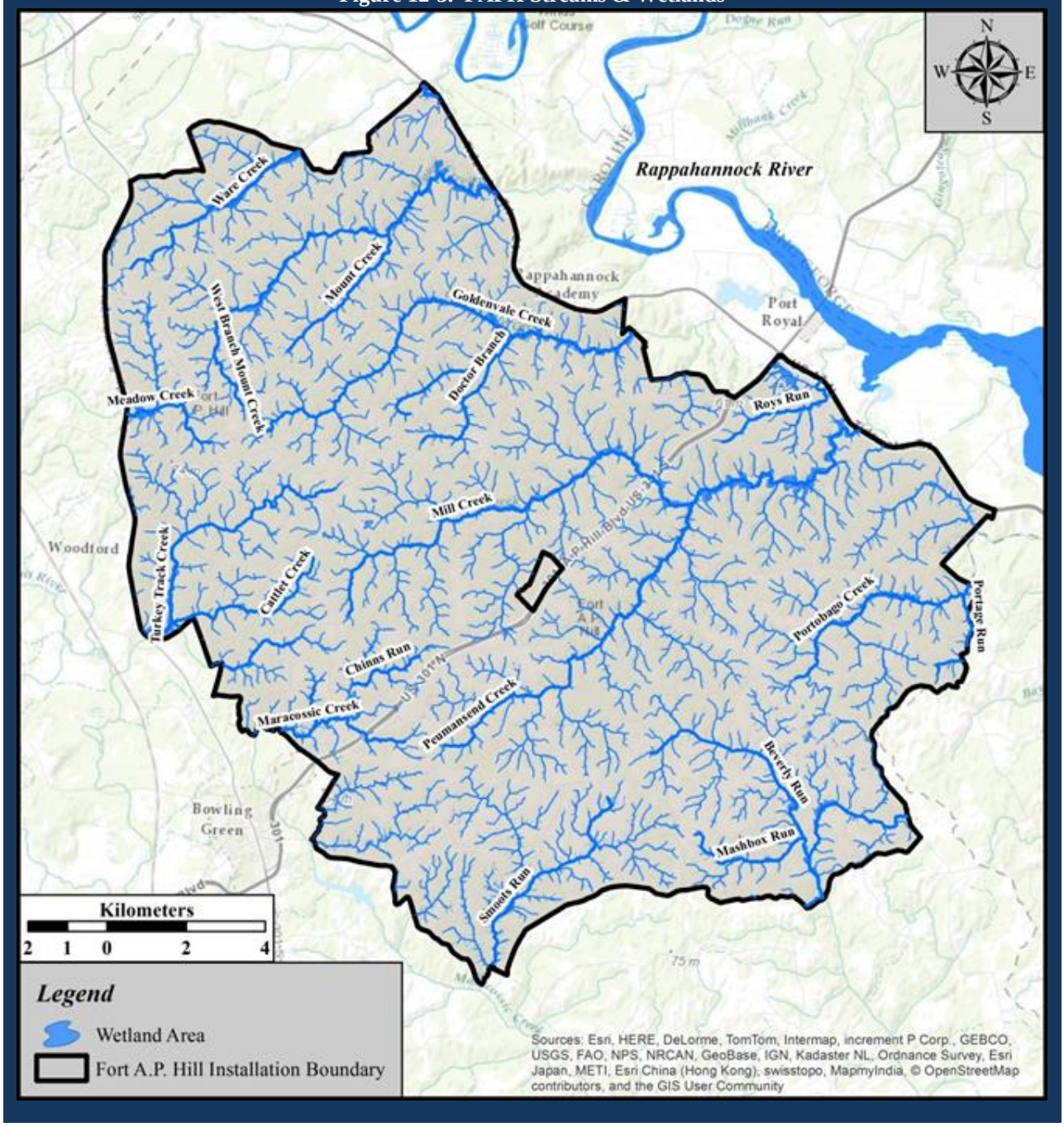
12.8.2 WETLANDS

The CWA defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and under normal circumstances do support a prevalence of vegetation typically adapted for life in the saturated soil conditions.” Wetlands are extremely productive and diverse ecosystems. In addition to functioning as an important habitat for diverse and protected species, wetlands provide an important water management system by regulating stormwater and flood flows by absorbing and filtering excess water.

FAPH currently maintains digital wetland delineations in its GIS data layer. Currently, there are 6,386 acres of palustrine emergent wetlands, palustrine scrub/shrub wetlands, and palustrine forested wetlands, which represents 8% of the installation’s total land area. The majority (>90%) of wetlands data within the GIS data layer were delineated from methodologies developed by the U.S. Fish and Wildlife Service to create the National Wetlands Inventory (NWI). Although there are accuracy limitations with the NWI delineations, it is utilized as the preliminary planning level analysis tool. The remaining wetlands data (< 10%) were delineated by environmental consulting companies that completed wetland field surveys using methods approved by the U.S. Army Corps of Engineers. The wetlands GIS data layer is updated annually to better facilitate current and future land use activities and to provide long-term sustainability of wetland resources (Figure 12-3).

Outside the natural hydrogeomorphic characteristics which have caused FAPH's wetlands, there are two additional influences which are primarily responsible for the creation and distribution of wetlands. The first, the American Beaver (*Castor canadensis)* is responsible for hydrologic modifications which have influenced the establishment of numerous wetlands, although the amount of wetlands created from beaver influence is constantly changing and has not been quantified. The second, human activity has resulted in the establishment of additional wetlands and is primarily due to historical improvements/modifications to the road networks.

Figure 12-3. FAPH Streams & Wetlands



The primary focus of the FAPH's Wetland Program is to maintain a program that complies with all applicable laws, regulations, and policies associated with protecting wetlands water quality, ecological integrity, and overall watershed health. Activities occurring both in and around

surface waters (streams & impoundments) and wetlands that would result in negative impacts on the habitats are minimized and avoided. Where negative impacts on these resources are not avoidable, they are mitigated in accordance with current laws and regulations. FAPH takes a progressive approach toward protecting surface waters (to include intermittent streams), wetlands, and adjacent resource protection areas.

Management efforts specific to this program include the following:

a. Projects and activities are reviewed by ENRD through the Work Order and NRSA Process to determine if the proposed actions have the potential to negatively impact surface waters and wetlands. If a potential impact is suspected, ENRD then assesses the proposed activity and identifies all applicable regulatory compliance and mitigation requirements.

b. In accordance with the Chesapeake Bay Preservation Area Designation and Management Regulations, FAPH has established 100-foot wide RPAs around all wetlands and perennial streams. In addition, FAPH extends the RPA designation to include intermittent streams due to their inherent biological importance. The construction of new facilities, roads, trails, and mechanical firebreaks (i.e. plow lines) are prohibited within a RPA; the sole exception to the latter is in the event of wildfire suppression which may require subsequent remediation. FAPH also applies land disturbance restrictions within the 100-foot wide RPA to include forestry and other, non-silvicultural vegetation management activities. Exceptions to the RPA policy shall be validated and documented by the proponent and approved by the DPW-ENRD Chief. Examples of such exceptions may include, but are not limited to, establishing desired terrain conditions for military mission support, thinning of overstocked forest stands for forest health improvement, forest insect and disease treatments, site-specific habitat management practices, and/or ecological restoration. When an exception has been approved, a 50-foot “no disturbance” SMZ shall be established around all wetlands, perennial, and intermittent streams to minimize any impacts from management actions. RPA compliance for natural resources related activities shall be tracked in the NRSA process and associated documents. Reference Figure 12-3 for Chesapeake Bay RPAs.

c. Continue to develop the wetland inventory geospatial database by compiling information on wetland characteristics as it is collected.

d. Pursue water quality management procedures that protect wetlands from non-point source runoff.

e. Conduct water quality monitoring at predetermined stream locations. The purpose of water quality monitoring will be to determine whether runoff from activities is impacting

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water quality. If negative impacts are occurring, a process to mitigate the impacts will be investigated and corrective actions implemented.

f. Redirect and minimize vehicle use on roads and firebreaks that traverse wet areas or improve crossings to minimize impacts on the habitats and water quality.

g. Complete planning level surveys and update the NWI database. Planning level surveys will be completed to quantify additional wetland habitats and assess ecological functionality and habitat quality. Wetlands identified during planning level surveys will be digitized using GPS allowing the NWI to be continually updated.

h. Continue to maintain Riparian Forest Buffers (RFB) and Chesapeake Bay RPA's around all wetlands, surface waters, intermittent and perennial streams.

i. Establish an Offsite Stream and Wetland Mitigation Bank to support future mission training requirements.

12.8.3 FLOODPLAINS

Executive Order 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities" for the following actions:

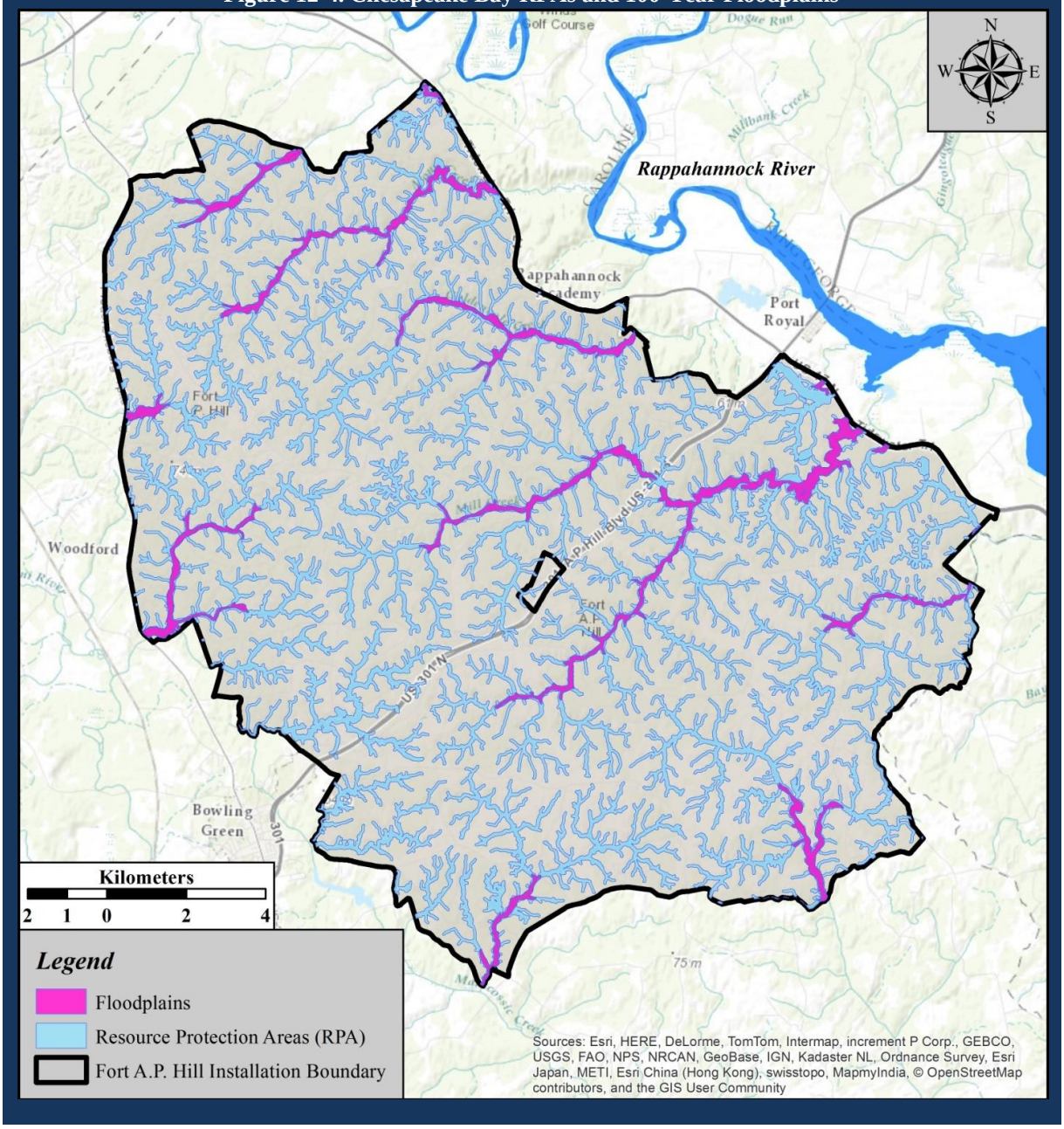
a. Acquiring, managing, and disposing of federal lands and facilities

b. Providing federally-undertaken, financed, or assisted construction and improvements

c. Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities

FAPH uses the NEPA process to evaluate the potential effects of actions proposed in floodplains (Figure 12-4).

Figure 12-4. Chesapeake Bay RPAs and 100-Year Floodplains



12.8.4 GROUNDWATER

The hydrogeologic framework of the Virginia Coastal Plain consists of multiple confined aquifers and confining units, and a water table aquifer system. Major boundaries for the Coastal Plain are the Fall Line to the west and the fresh water/salt water interface in the Chesapeake

Bay and Atlantic Ocean to the east. Groundwater flow is regionally to the east and locally to the surface water bodies that intersect the various aquifers. Most recharge of the Coastal Plain groundwater system occurs in the aquifer outcrop zones near the Fall Line, where precipitation and surface water can infiltrate into unconfined and confined aquifers. Regionally, vertical leakage through confining units to underlying confined aquifers is an important mechanism for groundwater recharge.

Groundwater occurs under varying hydrogeologic conditions throughout FAPH. Groundwater discharges to all the perennial and intermittent streams on the installation and comprise what is typically referred to as base flow. The headwaters of most streams on the installation are formed where groundwater discharges to the surface in the form of seeps and springs.

Management efforts specific to this program include the following:

a. Groundwater Withdrawal Permit compliance

b. Continue to remove underground storage tanks

c. Continue to monitor all groundwater parameters associated with closed landfills.

12.8.5 CHESAPEAKE BAY

The Chesapeake Bay is a national treasure constituting the largest estuary in the United States and one of the largest and most biologically productive estuaries in the world. The Federal Government has nationally significant assets in the Chesapeake Bay and its watershed in the form of public lands, facilities, military installations, parks, forests, wildlife refuges, monuments, and museums.

Located within the Chesapeake Bay, FAPH follows all federal guidance and state regulations pertaining to maintaining water quality of streams and wetlands within its jurisdiction. Water leaving the installation ultimately travels to the Chesapeake Bay. Restoring water quality in the Chesapeake Bay requires a multi-jurisdictional partnership between the states and federal agencies located in the Chesapeake Bay watershed. Part of FAPH's land management strategy is to avoid and minimize to the greatest extent possible all anthropogenic disturbances within the 100-footRPA around all intermittent and perennial streams, surface waters, and wetlands.

The federal government adopted a policy to favor the creation of forested riparian buffers along streams in order to help achieve both nutrient reduction and habitat restoration goals in support of the Chesapeake Bay Program. The DOD is a signatory to the agreement supporting the Chesapeake Bay Preservation Act (CBPA) and partnering to conduct Bay protection and restoration activities. The Army has adopted the policies and BMPs set forth in the CBPA.

FAPH recognizes that it has an environmental stewardship obligation to meet while ensuring the Army soldiers are prepared and ready for their national defense mission. As part of that commitment, Fort A.P. Hill has implemented strategies to meet applicable goals outline in the Army's Chesapeake Bay Action Plan, DOD Chesapeake Bay Strategic Action Plan, and Executive Order 13508, *Chesapeake Bay Protection and Restoration.*

12.8.6 COASTAL ZONE MANAGEMENT ACT

The CZMA requires that federal actions which may affect land and water use or coastal zone natural resources be implemented consistent with the enforceable policies of an approved state management program. The Act authorizes states to administer approved coastal nonpoint pollution programs.

Federal activities which are reasonably likely to affect any land or water use or natural resources of Virginia's designated coastal resources management area must be consistent with the enforceable policies of DEQ's Virginia Coastal Zone Management Program (VCP) before they occur. The VCP is a networked program with several agencies administering the enforceable policies. FAPH uses the NEPA process to comply with CZMA and VCP requirements.

Enforceable policies of the VCP are:

a. Fisheries Management

b. Subaqueous Lands Management

c. Wetlands Management

d. Dunes Management

e. Non-point Source Pollution Control

f. Point Source Pollution Control

g. Shoreline Sanitation

h. Air Pollution Control

i. Coastal Lands Management

12.8.7 FORESTRY BEST MANAGEMENT PRACTICES FOR WATER QUALITY

FAPH implements Virginia Department of Forestry BMPs for Water Quality (VDOF 2011) to ensure that no silvicultural activities negatively impact water quality. (See Chapter 7 of this INRMP for additional clarification on the implementation of specific Forestry BMPs to maintain water quality and list of management plans and processes).

There are five types of water pollutants resulting from silvicultural activities:

a. Sediment

b. Nutrient

c. Organics

d. Temperature

e. Chemicals

Silvicultural activities that have the greatest chance of causing nonpoint source pollution include:

a. Forest road construction and temporary trails

b. Forest harvesting activities

c. Site preparation activities

d. Prescribe burning activities

e. Wildfire response activities

All efforts are made to ensure that silvicultural BMPs are implemented to meet or exceed water quality standards for land disturbing activities.

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13.0 GROUNDS MAINTENANCE

13.1 INTRODUCTION

All facilities, grounds, buildings, and structures on FAPH are classified in accordance with the Army's Real Property Inventory. Grounds fall into two major categories - operational areas and cantonment areas. Operational areas comprise approximately 74,500 acres (98% of FAPH) and consist of training facilities such as ranges, training areas, airfields, tactical landing zones, drop zones, etc. Cantonment areas comprise approximately 1,300 acres and consist of permanent barracks, administrative facilities, garrison amenities, etc., and their associated parking areas and roads. For maintenance purposes, grounds are further classified as Improved, Semi-improved, or Unimproved depending on the land use, physical condition, and investments required for maintenance. Maintenance activities occur in accordance with all applicable laws, regulations, directives, and guidance (Table 13-1).

13.1.1 IMPROVED GROUNDS MANAGEMENT

Improved grounds are areas where intensive maintenance activities must be planned and performed annually as fixed requirements (e.g., repeat mowing, seeding, pruning/trimming; weed, dust, and erosion control). Much of the improved grounds can be found in the cantonment area and live-fire ranges but improved grounds also constitute facilities used for administration, housing/lodging, landscaped areas, parade grounds, drill fields, and athletic grounds. The mowing of improved grounds is conducted seasonally (April – September) at intervals sufficient to prevent woody vegetative growth from encroaching and maintaining health and safety considerations (Table 13-3).

13.1.2 SEMI-IMPROVED GROUNDS MANAGEMENT

Semi-improved grounds are areas where periodic recurring maintenance is performed to keep a low vegetative cover, but to a lesser degree than on improved grounds. Activities include mowing primarily for safety and security, weed and brush control, erosion control, dust control, and disking / planting to improve wildlife forage value. These grounds consist of live-fire ranges, road shoulders, landing / drop zones, wildlife food plots, earth embankments, outlying recreation or support facilities and other open areas used for non-live-fire training activities. Semi-improved areas are mowed at a variable frequency based on military use of a particular site. At a minimum, semi-improved areas are mowed once annually (April – September) to keep back woody vegetation encroachment, however, some areas may be mowed monthly if the area is scheduled to support numerous training events (Table 13-4, Table 13-6).

13.1.3 UNIMPROVED GROUNDS

Unimproved grounds are predominately forested and are used extensively for military training and recreational hunting. Management and maintenance activities normally evolve from either

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the military mission, environmental management requirements, ecosystem sustainability, or otherwise as needed (Chapter 7, 8, and 9 of this INRMP). Unimproved grounds also include maneuver training areas, impact areas, controlled access areas, and aquatic resources such as wetlands, streams, waterways, and open water areas.

Unimproved grounds in an open condition are mowed at a variable frequency based on military use of a particular site. At a minimum, semi-improved areas are mowed once annually (April – September) to keep back woody vegetation encroachment, however, some areas may be mowed monthly if the area is scheduled to support numerous training events (Table 13-5, Table 13-6). More than 400 acres of unimproved grounds are currently managed to provide forage for wildlife.

Table 13-1. Laws, Regulations, Directives, and Guidance applicable to Grounds Maintenance
Federal
Executive Order 13112 – *Invasive Species* (64 Fed. Reg. 6183)
Executive Order 13693 – *Planning for Federal Sustainability in the Next Decade* (80 Fed. Reg. 15871)
Guidance for Federal Agencies on Sustainable Practices For Designed Landscapes
Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds
DOD
DOD Instruction 4715.03 – *Natural Resources Conservation Program*
Department of Defense Directive 4001.1 – *Installation Support*
DOD – Pollinator Partnership MOU - To Promote the Conservation and Management of Pollinators
U.S. Army
Army Regulation 200-1 – *Environmental Quality: Environmental Protection and Enhancement*
Army Regulation 350-19 – *Sustainable Range Program*
Army Regulation 420-1 – *Army Facilities Management*
Department of the Army Technical Manual 5-629 – *Weed Control and Plant Growth Regulation*
Department of the Army Technical Manual 5-630 – *Natural Resources: Land Management*
Department of the Army Technical Manual 5-803-13 - *Landscape Design and Planting*
U.S. Army (cont.)
Department of the Army Pamphlet 415-28 – *Construction: Guide to Army Real Property Category Codes*
Department of the Army Pamphlet 420-11 – *Facilities Engineering: Project Definition and Work Classification*
Fort A.P. Hill
Integrated Cultural Resources Management Plan (Appendix D)
Nutrient Management Plan

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Table 13-1. Laws, Regulations, Directives, and Guidance applicable to Grounds Maintenance
Installation Design Guide
Landscape Maintenance Plan
Commonwealth of Virginia
Virginia State Water Control Law (§§ VA. CODE ANN. 62.1-44.2 to -44.33:28 / VAC 25-31)
Virginia Fertilizer Law (§§ VA. CODE ANN. 3.2-3600 to -3625)

13.2 ROLES AND REPSONSIBILITIES

Grounds maintenance is accomplished by leveraging resources from multiple garrison functional areas to meet grounds maintenance objectives.

The DPW O&M Division, Roads and Grounds Branch, is the primary organization on FAPH responsible for grounds maintenance. The Roads and Grounds Branch maintains the improved grounds in the cantonment area and provides direct and indirect support to maintaining semi-improved and unimproved grounds annually.

DPW ENRD (Fish and Wildlife Branch) is responsible for maintaining approximately 500 acres of the semi-improved grounds in a manner that supports military use of the grounds while providing beneficial wildlife forage / cover opportunities.

DPW ENRD Forestry Branch is responsible for maintaining unimproved forested areas on the installation.

The DPTMS ITAM program is responsible for maintaining some of the semi-improved grounds to support military training and sustain vegetation cover and repair military maneuver damage to preclude soil erosion.

The DFMWR maintains improved open areas around recreational facilities (e.g., Golf Driving Range).

Lessees are responsible for maintaining open conditions on the leases they hold for its duration.

Installation tenants may conduct open areas maintenance depending on the terms of their agreement with FAPH.

13.3 MANAGEMENT OBJECTIVES

Open areas management is a significant aspect to implementing the INRMP as it supports all three main goals of the INRMP and numerous objectives (Table 13-2).

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Table 13-2. INRMP Goals, Objectives, and Performance Measures accomplished through Grounds Maintenance (in bold)		
Goal	**Objective(s)**	**Performance Measure(s)**
1.0 Sustainably manage the Army's natural resources to support Mission requirements	**1.1 Coordinate with military land users to identify Mission requirements**	**(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)**
	1.2 Sustainably manage habitats to meet doctrinal training requirements	**(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned (3) % of Open Areas in prescription** (4) Deer density (per mi^2) **(5) WASH Plan** (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	**2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities**	(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR **(5) Open area condition** (6) Annual updates to Hunting and Fishing Regulations
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	(1) Outreach events (2) Recreation Safety **(3) Public wildlife viewing opportunities**
	2.3 Implement activities that mutually benefit installation natural resources management and the community	(1) Recreational user Satisfaction (2) Recreational user trends
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity	(1) Population indices **(2) Suitable habitat (acres)** (3) Sufficient no. of adequately trained CLEOs
	3.3 Manage invasive species to limit impacts to native habitats	**(1) Treatment / Control (% of occurrence sites)** (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials

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13.4. ANNUAL MOWING

Mowing is the mechanical cutting of target vegetation. Mechanical cutting may employ push mowers, large self-propelled or riding mowers, tractors with brush hogs, edgers, and string trimmers. Equipment is selected based on terrain, target vegetation size, and equipment availability. Mowing is restricted by steep slopes, rocky terrain, and wet sites with deep soft soils, and is most often used in areas where terrain site conditions permit efficient use of the equipment.

FAPH's mowing most frequently occurs within the cantonment areas and existing roadway shoulder network where aesthetics, functionality, and health and safety necessitate a high frequency of mowing. Mowing of semi-improved grounds is conducted at pre-scheduled intervals and/or upon request. The mowing schedules for various areas on FAPH are summarized below (Tables 13-2 through 13-5).

Table 13-3. Mowing Summary for Improved Grounds

Location	Acres +/-	Mowing Frequency
Headquarters Area	28	Bi-weekly
Main Entrance	7	Bi-weekly
DPW	1	Bi-weekly
Anderson / Inspection Station	8	Bi-weekly
Family Housing	10	Bi-weekly
Supply Storage / Motor Pool	4	Bi-weekly
Greenlawn Housing	7	Bi-weekly
Wilcox TTB	90	Bi-weekly
Heth Area	8	Bi-weekly
Beaverdam Picnic Area	20	Bi-weekly
POL Facility	5	Bi-weekly
DPTMS / Range Operations	9	Bi-weekly
Virginia National Guard Armory	4	Bi-weekly
Longstreet TTB	21	Monthly / Request
Pender TTB	97	Monthly / Request
Archer Camp	33	Monthly
Champ's RV Park	2	Bi-weekly
ASP (Interior)	10	Bi-weekly
ASP (Exterior)	36	Monthly

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Table 13-3. Mowing Summary for Improved Grounds		
Location	**Acres +/-**	**Mowing Frequency**
EP4 Compound (Exterior)	11	Monthly
TSC	1	Bi-weekly
TSC (Basin)	1	Twice Annually
Camp Connors	20	Monthly
Outdoor Recreation / Game Check	12	Monthly
Golf Driving Range	15	Bi-weekly
TISA	2	Bi-weekly
Fire Station #9	1	Bi-weekly
Lodge	1	Bi-weekly
Cabin Sites	10	Monthly / Request
Liberty Church	3	Monthly / Request
DPW ENRD Cultural Resources Annex	2	Monthly
ARC Cooke TTB	7	Bi-weekly
ARC AP Hill Dr.	3	Bi-weekly
TOTAL	**490**	

Table 13-4. Mowing Summary for Semi-Improved Grounds (Training Areas)		
Location	**Acres +/-**	**Mowing Frequency**
Panel Bridge Site	7	Annual / Request
Decon / Leader Course	2	Monthly / Request
Cooke TTB	28	Monthly / Request
Davis TTB	57	Annually / Request
Jackson TTB	41	Monthly / Request
Mahone TTB	58	Monthly / Request
Rappahannock TTB	36	Monthly / Request
Drop Zone	460	Annual / Request
Lumpkin Rd. Storage	1	Annual / Request
Rail Loading Site	1	Monthly / Request
Rappel Tower "A"	4	Annual / Request
Villeboro Entrance	1	Monthly / Request

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Table 13-4. Mowing Summary for Semi-Improved Grounds (Training Areas)		
Location	**Acres +/-**	**Mowing Frequency**
Well Houses/Lift Stations	-	Annual / Request
Maneuver Corridor (A,B,C)	164	Monthly / Request
Driver's Training Course	44	Monthly / Request
CACTF	10	Monthly / Request
Shoothouse	5	Monthly / Request
Urban Assault Course	4	Monthly / Request
IED Defeat Course	2	Monthly / Request
Total	**923**	

Table 13-5. Mowing Summary for Unimproved Grounds (Training Areas)		
Location	**Acres +/-**	**Frequency**
Open Areas		
Arena	17	Annual / Request
Acors Corner / Scales	6	Annual / Request
Sanitary Landfill (Closed)	9	3 Cuttings / Year - Minimum
Parade Field	5	Annual / Request
APH Drive "Fields"	65	Annual / Request
Other open areas	1,860	Annual / Request
Sub-total	*1,962*	
Road Shoulders (15 ft. Both Sides)		
A.P. Hill Drive to Pullers Corner	24	Monthly
Early Drive	8	Monthly
Pullers Corner to Rappahannock TTB	18	Monthly
Range 19 to Cooke TTB	12	Monthly
Wilcox Dr to Taylors Corner	12	Monthly
N. Range Rd to Custer Tr.	24	Monthly
Lee Drive to Taylors Cor.	10	Monthly
Fortune Road to Wilcox	6	Monthly
Taylors Corner to Monroe Corner	8	Monthly
Route 301 (Incl. medians)	10	Monthly

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Table 13-5. Mowing Summary for Unimproved Grounds (Training Areas)		
Location	**Acres +/-**	**Frequency**
Gravel Roads	330	Monthly
South Range Road to Beasley's Corner	10	Monthly
Sub-total	*472*	
Intersection & Curves		
Wilcox Drive	1	Monthly
Lee Drive	1	Monthly
Intersection & Curves (cont.)		
Thomas Drive	1	Monthly
Spring Road	1	Monthly
Lodge Road	1	Monthly
AP Hill Drive at Turkey Tr. Creek	1	Monthly
Engineer Road	1	Monthly
Sub-total	*8*	
Airfields / Landing Zones (LZ)		
Airfield 1	50	Monthly / Request
Wilcox LZ	20	Annual / Request
Cooke LZ	3	Annual / Request
Other Landing Zones +	34	Annual / Request
Sub-total	*107*	
Sewage Lagoons / Drainfields		
Rodes Lagoon	2	Annual
Cooke Lagoon	3	Annual
Longstreet Lagoon	22	Annual
Wilcox Lagoon	4	Annual
Davis Lagoon	1	Annual
Jackson Lagoon	1	Annual
Drainfields	5	Annual
Sub-total	*38*	
Lake & Pond Margins / Dams		
Beaverdam Pond	10	Annual
Beaverdam Pond Dam	0.25	Twice Annually

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Table 13-5. Mowing Summary for Unimproved Grounds (Training Areas)		
Location	**Acres +/-**	**Frequency**
Bowies Pond	1	Request
Bowie's Pond Dam	0.25	Twice Annually
Lake & Pond Margins / Dams (cont.)		
Buzzard Roost Pond	3	Request
Buzzard Roost Pond Dam	0.25	Twice Annually
Bullock Pond	1	Annual
Bullock's Pond Dam	0.25	Twice Annually
Delos Lake	1	Annual
Delos Lake (Upper) Dam	0.25	Twice Annually
Dirt Bridge Pond	5	Annual
Fish Hook Lake	4	Annual
Herns Pond	2	Request
Herns Pond Dam	0.25	Twice Annually
Lonesome Gulch Pond	2	Annual
Lower Travis Lake	3	Annual
Smoots Pond Dam	0.25	Twice Annually
Upper Travis Lake	1	Annual
Upper Travis Lake Dam	0.25	Twice Annually
Lower Travis Lake Dam	0.25	Twice Annually
Whites Lake	1	Annual
Whites Lake Dam	0.25	Twice Annually
Sub-total	*36.5*	
TOTAL	**2,623**	
+ Not already captured under another mowing area		

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Table 13-6. Mowing Summary for Semi-Improved / Unimproved Grounds (Range Complex)		
Location	**Acres +/-**	**Frequency**
Range 1	4	Bi-weekly
Range 2	4	Bi-weekly
Range 3 (Firing Line)	4	Bi-weekly
Range 3 (Down range)	100	Monthly
Range 4	6	Bi-weekly
Range 5	3	Bi-weekly
Range 6	4	Bi-weekly
Range 6n	5	Bi-weekly
Range 7	5	Bi-weekly
Range 8	12	Bi-weekly
Range 9 (proper)	6	Bi-weekly
Range 10A	4	Bi-weekly
Range 10	20	Bi-weekly
Range 12 / Finnegan's Field	27	Monthly
Range 14	10	Monthly
Range 15	25	Monthly
Range 16	11	Monthly
Range 17	16	Monthly
Range 18	8	Monthly
Range 19	10	Request
Range 20	12	Request
Range 21	10	Monthly
Range 22	16	Monthly
Range 23	7	Monthly
Range 24	80	Monthly
Range 25	23	Monthly
Range 26	17	Request
Range 27p	6	Monthly
Range 27s	4	Monthly

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Table 13-6. Mowing Summary for Semi-Improved / Unimproved Grounds (Range Complex)		
Location	**Acres +/-**	**Frequency**
Range 28p	26	Monthly
Range 28s	5	Monthly
Range 29	37	Monthly
Range 32	45	Request
Range 33	80	Monthly
Range 34	30	Monthly
Range 35	5	Bi-weekly
Range 37	30	Bi-weekly
Range 38	4	Request
Range 39	3	Monthly
Convoy Live Fire	12	Monthly
AWG Battle Lab	82	Monthly
AWG 800m / 1200m Range	85	Monthly
EOD TC	70	Monthly
AWG Light Demo	3	Monthly
Firing Point 2	5	Annual
Firing Point 3	4	Annual
Firing Point 7	8	Annual
Firing Point 8	1	Annual
Firing Point 11	5	Annual
Firing Point 12	5	Annual
Firing Point 14 / 15	6	Annual
Firing Point 16	6	Annual
Firing Point 17	3	Annual
Firing Point 18	5	Annual
Firing Point 19	2	Annual
Firing Point 20	16	Annual
Firing Point 21	3	Annual
Firing Point 22	10	Annual
Firing Point 26	5	Annual

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Table 13-6. Mowing Summary for Semi-Improved / Unimproved Grounds (Range Complex)		
Location	**Acres +/-**	**Frequency**
Firing Point 27	7	Annual
Firing Point 28	4	Annual
Firing Point 31	3	Annual
Firing Point 34	10	Annual
Firing Point 39	8	Annual
Firing Point 40	4	Annual
Firing Point 41	4	Annual
Firing Point 43	5	Annual
Firing Point 46	4	Annual
Firing Point 47	3	Annual
Firing Point 48	4	Annual
OP 1	7	Annual
OP 2	5	Annual
OP 8	2	Annual
DEMO Site 13	**1**	Annual / Request
TOTAL	**1,130**	

13.5 LANDSCAPING

Landscaping maintenance is conducted annually and generally entails mowing, mulching, weeding, trimming / limbing, and tree or shrub replacement. Hazard tree removal is also required to ensure health and safety of installation personnel. Limited application of herbicides may be required in landscaped areas. Any application of herbicides shall be implemented in accordance with FAPH's IPMP (Appendix I). Landscaping can be characterized as being either conventional (i.e., aesthetics-based) or stormwater management (i.e., functional-based). Regardless of which type of landscaping occurs at a given location, native species selection, pollinator conservation, aesthetics, and low maintenance requirements are all considered. Landscape plantings and maintenance activities shall comply with all applicable laws, regulations, directive, and guidance (Table 13-1). FAPH is located within Plant Hardiness Zone 7a where many ornamental plants can survive the minimum temperature range of 0 – 5 degrees Fahrenheit (USDA 2013).

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13.5.1 CONVENTIONAL LANDSCAPING

Most of the landscaped areas on FAPH follow conventional landscaping designs and practices with aesthetics being the primary objective for their establishment and maintenance. Most of FAPH's cantonment area (e.g., administrative facilities, camp sites) and recreational areas have some degree of landscaping, either in clearly delimited mulched beds or in group plantings.

13.5.2 STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES

FAPH has several landscaping areas specifically designed to reduce stormwater run-off from nearby impervious surfaces. These areas utilize species and plantings similar to conventional landscaping practices, but they often feature depressions in the plant beds and/or subterranean conveyances to transport stormwater run-off. These stormwater best management practices require landscape maintenance consistent with conventional landscaping but at a higher frequency to ensure they maintain their functional purpose. These areas are functionally distinct from conventional landscaped areas due to micro-terrain aspects facilitating the retention of stormwater run-off. FAPH also has a Low Impact Development parking area that utilizes pervious surface materials and stormwater BMPs to reduce stormwater run-off that require recurring landscape maintenance.

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14.0 INTEGRATED TRAINING AREA MANAGEMENT

14.1 INTRODUCTION

In addition to traditional land management activities (e.g., Forestry, Fish & Wildlife management) the U.S. Army also supports the Integrated Training Area Management (ITAM) program as a component of its overall Sustainable Range Program (SRP). The goal of SRP is to maximize the capability, availability, and accessibility of ranges and training lands to support doctrinal training requirements, mobilization, and deployments under normal and surge conditions. The ITAM program supports FAPH's missions and training land management capabilities in accordance with all applicable federal, state, and local laws and regulations, directives, regulations, and initiatives (Table 14-1). ITAM is the training land management component of DPTMS which maintains maneuver training capability and other training assets to doctrinal standards. ITAM is part of the installation's integrated land management planning team. ENRD and ITAM work cooperatively to identify and prioritize projects, schedule consecutive management activities, and evaluate management implementation methodologies to ensure that the FAPH landscape meets mission requirements in a manner that sustains the environment. DPW and DPTMS have complimentary capabilities and overlapping authorities and responsibilities in land management necessitating thorough coordination and collaboration. ITAM is a key component of the Range Complex Master Plan (RCMP) which aligns with this INRMP to ensure the primacy military utilization of facilities and the FAPH landscape.

14.2 ROLES AND REPSONSIBILITIES

The ITAM Coordinator is responsible for ensuring that all ITAM requirements (e.g., personnel, equipment, resources) are provided to the DPW for inclusion in this INRMP; providing an end of year summary of all completed ITAM projects to ENRD for inclusion in end of year reporting, ensuring that all ITAM projects with the potential to disturb soil, water, and/or vegetation resources are submitted to the ENRD for review (i.e., Work Orders and monthly coordination meetings) to ensure compliance with all applicable federal, state, and local environmental regulations, and ensuring that all heavy equipment operators performing soil disturbing activities on FAPH have Virginia DCR Responsible Land Disturber Certification.

The DPW-ENRD Chief is responsible for reviewing all ITAM projects for compliance with all applicable federal, state, and local environmental regulations and requirements.

The DPW-ENRD Natural Resources Program Manager is responsible for ensuring that ITAM requirements are incorporated into this INRMP and to account for work that is completed annually.

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14.3 MANAGEMENT GOALS

ITAM's missions include the maintenance of land conditions, repairing training maneuver damage, ensuring trail accessibility for tactical vehicles, and maintaining open areas to support doctrinal training requirements. These efforts compliment the efforts of the DPW O&M Division and ENRD.

Table 14-1. Laws, Regulations, Directives, and Guidance applicable to ITAM
Federal
The Clean Water Act, *as amended* (33 U.S.C. Sec. 1251 et seq.)
The Endangered Species Act, *as amended* (16 U.S.C. Sec. 1531 / 50 CFR 17; 402)
National Environmental Policy Act (42 U.S.C. Sec. 4321 / 40 CFR 1500)
DOD
DOD Instruction 4715.03 – *Natural Resources Conservation Program*
U.S. Army
Army Regulation 350-19 – *Sustainable Range Program*
Army Regulation 200-1 – *Environmental Quality: Environmental Protection and Enhancement*
IMCOM FY15 Narrative Funding Guidance
Memorandum, DAMO-TRS, Subject: Funding Guidance For Managements Decision Package (MDEP) TATM (16 September 09)
Memorandum, DAMO-TRS, Subject: Range and Training Land Complex Maintenance, (30 August 07)
Memorandum, DAIZ, Subject: Sustainable Range Program Environmental Activity Responsibility Matrix (30 June 05)
Memorandum, DAIM-ZA, Subject: U.S. Army Installation Geospatial Information and Services (IG&S) Data Proponency, Common Installation Picture, and Quality Assurance Plans (QAPs) (15 August 2008)
Memorandum, DAIM-ZA, Subject: Data Standards for Geographic Information Systems (GIS) and Computer Aided Drafting and Design (CADD) Standards and Related Technologies (20 April 2005)
Fort A.P. Hill
Regulation 200-1 – Environmental Requirements
Range Complex Master Plan
Integrated Cultural Resources Management Plan (Appendix D)
Integrated Pest Management Plan (Appendix I)
Commonwealth of Virginia
Virginia State Water Control Law (§§ VA. CODE ANN. 62.1-44.2 to -44.33:28 / 9 VAC 25, 31, 830, 840, 870)

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Table 14-2. INRMP Goals, Objectives, and Performance Measures accomplished through the ITAM Program (in bold)		
Goal	**Objective(s)**	**Performance Measure(s)**
1.0 Sustainably manage the Army's natural resources to support Mission requirements	**1.1 Coordination between military land users and natural resources program managers to identify Mission requirements**	**(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)**
	1.2 Sustainably manage habitats to meet doctrinal training requirements	(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned **(3) % of Open Areas in prescription** (4) Deer density (per mi^2) (5) WASH Plan (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities	(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR (5) Open area condition (6) Annual updates to Hunting and Fishing Regulations
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	(1) Outreach events (2) Recreation Safety (3) Public wildlife viewing opportunities
	2.3 Implement activities that mutually benefit installation natural resources management and the community	(1) Recreational user Satisfaction (2) Recreational user trends
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity.	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity	(1) Population indices (2) Suitable habitat (acres) (3) Sufficient no of adequately trained CLEOs
	3.3 Manage invasive species to limit impacts to native habitats	**(1) Treatment / Control (% of occurrence sites)** (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials

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14.4 COMPONENT PROGRAMS

The ITAM Program is comprised of five functional areas described in more detail following sections:

a. Training Requirements Integration (TRI)

b. Land Rehabilitation and Maintenance (LRAM)

c. Range and Training Land Assessments (RTLA)

d. Sustainable Range Awareness (SRA)

e. GIS

14.4.1 TRAINING REQUIREMENTS INTEGRATION

The TRI component provides a decision support capability based on the integration of training requirements, land conditions, range facilities, and environmental management requirements. The ITAM coordinator will consult with ENRD, the Range Officer, and all other appropriate DPTMS personnel to integrate training requirements with land management, training management, ENRD data, and data derived from the RTLA efforts. TRI provides input for developing and updating the INRMP, range modernization, and training event scheduling and allocation.

14.4.2 LAND REHABILITATION AND MAINTENANCE

LRAM is the implementation component of ITAM that conducts land and vegetation management activities to create site-specific, desired terrain conditions to support military training. LRAM uses heavy equipment such as tractors, mowers, loaders, backhoes, shredders, and mulchers to manage vegetation along trails and open areas (e.g. indirect artillery firing points, tactical landing zones). LRAM complements the DPW O&M and DPW ENRD's capabilities in managing open areas to provide realistic and operational land conditions in a manner that supports natural resource conservation. Vegetation that is not actively managed can impede realistic training by encumbering mounted and dismounted maneuvers, obscuring line of sight visibility, or pose a hazard for wildfires if/when pyrotechnics are used.

On FAPH, LRAM's primary focus areas are:

a. Maintaining / improving the accessibility of training areas (e.g., vehicle access and use to and of an area)

b. Repairing maneuver damage to trails and maneuver space arising from military use

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c. Maintaining/restoring open maneuver space

d. Maintaining/restoring line of site

LRAM activities are coordinated with ENRD monthly to provide sufficient review of proposed activities. All LRAM activities shall be completed in accordance with all federal and state laws and regulations, and in accordance with this INRMP. LRAM has significantly enhanced the Fish & Wildlife Program through the reclamation of overgrown fields (primarily by autumn olive).

14.4.3 RANGE AND TRAINING LAND ASSESSMENTS

RTLA supports training through the acquisition and analysis of data, which is then used to maximize the capability and sustainability of the land. RTLA data and information can be used to:

a. Identify LRAM projects

b. Ensure that biological considerations are part of the LRAM project prioritization process.

c. Assess the effectiveness of LRAM projects

d. Calculate the land condition curves that support the Army's modeling methodology. For example, the cover, land use, and load curves

e. Create maps that depict the availability, suitability, accessibility, and capacity of training lands per training type

f. Recommend boundaries and training load distribution for newly acquired and existing training land, so that the capacity of the training land can best support a new or changing training mission, and a new intensity load

g. Conduct internal encroachment (i.e., self-imposed restrictions to training) assessments by routinely reviewing plans, such as the INRMP, ICRMP, agricultural leases, annual burn plan, and timber harvest plan.

14.4.4 SUSTAINABLE RANGE AWARENESS

SRA generates and distributes awareness materials to users of range and training land assets to ensure that the land user is aware of installation policies, practices, and land management requirements. In addition, SRA integrates the principles of sustainability through operational awareness activities and events (public and internal). SRA products communicate procedures

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aimed to reduce the potential impacts on range and training land assets, which include natural and cultural resources.

14.4.5 GIS

The ITAM GIS component develops, maintains, and updates select geospatial data sets and develops map products for units training on FAPH, as appropriate. This component program interfaces with the DPW GIS program and the Natural Resources Program to ensure efficient utilization of resources, data sharing, coordination in planning, and project execution in accordance with federal, state, and local laws, regulations, directives, and initiatives. ITAM's GIS component program develops maps of proposed LRAM activities for review by ENRD for compliance with this INRMP.

14.5 FUTURE PROJECTS (FY16-20)

The RCMP identifies the need for ITAM to maintain 6,500 acres of open areas annually, repair 300 acres of open areas annually, maintain 100 miles of maneuver trails annually, repair 30 miles of trails annually, and maintain 150 acres of bivouac areas (forested high use sites) annually. These activities shall be conducted in accordance with this INRMP and all associated guidance, laws, and regulations.

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15.0 OUTDOOR RECREATION

15.1 INTRODUCTION

FAPH's outdoor recreation program provides structured and recreation activities and instruction, to include a diverse, healthful, vigorous, and comprehensive outdoor recreation programs while conserving and protecting wildlife, forests, wetlands, and other natural resources. Outdoor recreation opportunities can generally be classified as dispersed or concentrated. Dispersed activities do not require the presence of highly developed facilities and include hunting, fishing, trapping, canoeing/kayaking, bird watching, bicycling, and interpretive nature trails. Concentrated recreation activities include camping, picnicking, and boating where designated recreational facilities are maintained. Activities that require highly developed facilities such as swimming pools, shooting ranges, and athletic fields are sporting activities not subject to this plan.

Dispersed outdoor recreation activities (i.e., hunting, fishing, trapping) are administered and managed by the DPW-ENRD (Fish and Wildlife Program)

Concentrated outdoor recreation activities (i.e., facility or fixed location based) are managed by FAPH's DFMWR.

All outdoor recreation activities are implemented in a manner compatible with the military mission and subject to safety and security requirements in accordance with all applicable federal, state, and local laws, regulations, directives, and guidance (Table 15-1).

FAPH's DFMWR may charge Special Recreation Activity Fees that defray Non-appropriated Fund expenses from outdoor recreation programs (e.g., hunting, fishing), but such fees may not be part of the permit cost or be so high as to interfere with the requirement to provide public access lands or to interfere with biological management of the hunting and fishing resource. The additional fee shall be documented to clearly show the sportsman which amount is for the hunting and fishing permit and what amount is being collected for the recreation fee.

Local communities adjacent to FAPH have historically strong ties to the recreational use of the land that comprises the installation. In accordance with all applicable federal and state laws and regulations, FAPH continues to provide outdoor recreational opportunities to military and civilians. The DPW ENRD supports DFMWR in offering quality outdoor recreational opportunities to FAPH personnel and local communities for their benefit and enjoyment. It is not an objective to generate maximum revenue from the sale of FAPH public use permits but to maintain an income base necessary to facilitate a self-sustaining program. A financially self-sustaining program is a requirement since (generally) very little financial contribution comes from appropriated sources.

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Table 15-1. Applicable Laws, Regulations, Directives, and Guidance Pertaining to Outdoor Recreation
DOD
DODI 1015.10 – *Military Morale, Welfare, and Recreation (MWR) Programs*
U.S. Army
AR 200 – 1 – Environmental Quality; Environmental Protection and Enhancement
AR 215 – 1 – Military Morale, Welfare, and Recreation: Military Morale, Welfare, and Recreation Programs and Non-appropriated Fund Instrumentalities
Fort A.P. Hill
Regulation 190-13 - Installation Access
Regulation 200-1 - Environmental Requirements

15.2 ROLES AND RESPONSIBILITIES

The Garrison Commander is responsible for i) ensuring that Army law enforcement personnel are trained in conservation law enforcement where appropriate and ii) that sufficient numbers of professionally trained natural resource management personnel and natural resources law enforcement personnel are available and assigned the responsibility to perform tasks necessary to comply with the Sikes Act (See Chapter 8 of this INRMP). The number of professionally trained conservation law enforcement officers available to meet this requirement is currently limited to the number of those positions authorized by the Army.

The DFMWR manages the concentrated recreation programs where developed facilities are essential. The Director, DFMWR is responsible for: i) planning, developing, coordinating, and directing concentrated Outdoor Recreation programs and ii) coordinating with the installation Safety Office to establish safety education and training programs appropriate to the type of outdoor recreation activity being offered.

The DPW-ENRD manages the dispersed recreational programs where the activities rely mostly on undeveloped woodlands, grasslands, and waterways. Military and off-post civilians typically are authorized to participate in these activities. More information on recreational hunting, fishing, and trapping is presented in Chapter 8 (Fish & Wildlife Management) of this INRMP. The DPW ENRD Chief is responsible for ensuring all Outdoor Recreation programs maintain compliance all applicable federal, state, and local environmental laws, regulations, and guidance.

15.3 MANAGEMENT GOALS AND OBJECTIVES

Implementation of the Outdoor Recreation Program contributes significantly toward achieving overall INRMP goals and objectives (Table 15-2).

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Table 15-2. INRMP Goals, Objectives, and Performance Measures accomplished through the Outdoor Recreation Program (in bold)		
Goal	**Objective(s)**	**Performance Measure(s)**
1.0 Sustainably manage the Army's natural resources to support Mission requirements	1.1 Coordinate with military land users to identify Mission requirements	(1) Recurring Coordination Meetings (2) Long-range vegetation management requirements (i.e., Missionscape Plan)
	1.2 Sustainably manage habitats to meet doctrinal training requirements	(1) % of Missionscape Acres Harvested (2) % of Missionscape Acres Burned (3) % of Open Areas in prescription **(4) Deer density (per mi^2) (5) WASH Plan** (6) Currency of Planning Level Surveys
	1.3 Sustainably manage Federal/State listed species to support the military mission	(1) Critical Habitat Designation (2) % of listed species surveys/habitat assessments conducted annually (3) Coordination with Federal and State agencies (4) Climate Change Vulnerability Assessment (5) % of Habitat maintenance activities completed
	1.4 Partner with Governmental and Non-Governmental entities to preserve open space off-post and promote Mission-compatible development	(1) Partnerships (2) Innovations (3) Acres Preserved
2.0 Provide recreational and educational opportunities that preserve and develop quality of life for Soldiers and the Community	**2.1 Sustainably manage fish and wildlife resources and provide recreational opportunities**	**(1) Biological/User Surveys (2) Harvest levels (3) Deer Herd Health (4) Coordination with DFMWR (5) Open area condition (6) Annual updates to Hunting and Fishing Regulations**
	2.2 Provide and collaborate in educational / outreach opportunities related to natural resources and management	**(1) Outreach events (2) Recreation Safety (3) Public wildlife viewing opportunities**
	2.3 Implement activities that mutually benefit installation natural resources management and the community	**(1) Recreational user Satisfaction (2) Recreational user trends**
3.0 Sustainably manage desired species and communities with proven scientific principles in accordance with all applicable federal, state and local laws and regulations	3.1 Sustainably manage Installation forest resources to ensure forest health, biodiversity conservation, and ecosystem integrity	(1) Forest Inventory currency (2) Acres harvested (3) Acres burned (4) Long-term Landscape DFCs (5) Currency of Monitoring (Timber Harvest AAR, Oak Regen, CBI, Pest)
	3.2 Sustainably manage Installation fish and wildlife resources to conserve biodiversity and ecosystem integrity	**(1) Population indices (2) Suitable habitat (acres) (3) Sufficient number of CLEOs**
	3.3 Manage invasive species to limit impacts to native habitats	(1) Treatment / Control (% of occurrence sites) (2) Inventory & Monitoring (3) Prevention procedures (4) Informational materials

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15.4 DEGREE OF PUBLIC ACCESS

15.4.1 GENERAL PROVISIONS

Access to the installation by the general public for recreational purposes is at the discretion of the Garrison Commander and subject to military training, safety, and installation security considerations. In accordance with Executive Order 13443 and the Sikes Act, FAPH allows public access for outdoor recreation and sustainable use and enjoyment of natural resources as long as there are no net losses in the capability of FAPH lands to support the military mission and requirements necessary to ensure safety and installation security. Members of the public interested in accessing the installation shall follow FAPH regulations regarding unescorted visitors and vetting procedures. Access to the installation and participation in Outdoor Recreation Programs generally requires a check in and out process through the iSportsman tracking system.

15.4.2 UNEXPLODED ORDNANCE

Live-fire training has been occurring on FAPH since its inception in 1941. Consequently, there is a risk of encountering UXO outside the cantonment areas. Recreationists interested in utilizing Outdoor Recreation programs, especially hunting in the Controlled Access areas, are required to review a UXO awareness and safety video. The periphery of the Range Complex is accessible, on a limited basis, for hunting with the provision that hunters participate in a special briefing that addresses the risk of encountering UXO. The duded impact area is located at the interior of the Range Complex and is off-limits to all personnel due to the known presence of UXO. The DPW-ENRD (Fish & Wildlife) publishes a Recreational Use Map that designates training areas, controlled access areas, impact areas, and other installation features for recreational use.

15.4.3 RECREATIONIST ACCOUNTABILITY

All individuals participating in outdoor recreation must check-in and check-out using established procedures to ensure accountability of those individuals present on FAPH at any given time. In the case of dispersed recreational activities, the iSportsman Tracking System is responsible for that accountability as well as for compiling survey information from the recreationist. The iSportsman System handles all hunting permit sales, reservations, check-in and out to areas, animals harvested, and hours hunted. The iSportsman system is also used to track and record all angler and trapper activity on FAPH.

15.4.4 PERMIT FEES

In accordance with the Sikes Act and Army Regulation 200-1 and 215-1, Special fishing, hunting, and trapping permit sales income and the collection of other nominal fees shall be used for the protection, conservation, and management of fish and wildlife. Fee collections for hunting, fishing, and trapping permits are collected via the iSportsman Tracking and Data

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Collection System with all proceeds deposited into FAPH's Fish & Wildlife Conservation Account (i.e., 21X) as the administrator of those programs.

15.5 OUTDOOR RECREATION PROGRAMS

FAPH offers numerous outdoor recreation opportunities to the active duty/reserve military, federal civilians, and the public.

15.5.1 HUNTING

The public hunting program on FAPH has been in place since at least 1954 and has broad support and enthusiastic participation by the local communities. FAPH offers approximately 59,000 acres open for hunting (46,000 acres in the training areas and 13,000 acres in the Controlled Access Areas) which average more than 9,500 hunt trips and 96,000 hours of hunting annually. Annual hunting seasons occur for white-tailed deer, turkey, small game, black bear, furbearer, waterfowl, and squirrel. The white-tailed deer and eastern wild turkey are by far the most popular species hunted at FAPH. FAPH hunting policies are set forth in FAPH Regulation 200-10 (Appendix G) and are consistent with the Commonwealth of Virginia Hunting Regulations. Individuals that wish to hunt on FAPH must purchase an installation hunting permit and hold a valid hunting license issued by VDGIF to hunt within the Commonwealth.

In addition to processing game harvests that occur on the installation, FAPH is also an official VDGIF Game Checking Station for deer, bear, and turkey.

The DPW-ENRD (Fish & Wildlife Branch) manages the Hunting Program (see Chapter 8 of this INRMP).

15.5.2 FISHING

FAPH offers 15 managed impoundments ranging from 3 acres up to 70 acres as well as numerous other beaver ponds for more than 500 acres of fishable water. In addition to naturally reproducing fish populations, trout and channel catfish stocking programs are offered seasonally to increase fishing opportunities.

FAPH fishing policies are set forth in FAPH Regulation 200-11 (Appendix G) and are consistent with the Commonwealth of Virginia Fishing Regulations. Individuals that wish to fish on FAPH must purchase an installation fishing license and hold a valid fishing license issued by VDGIF to fish within the Commonwealth.

Anglers are required to fill out Angler Use Cards each time they fish in order to provide information to resource managers on angler effort, biological loss, and fishing pressure. On average, more than 1,200 FAPH fishing permits are sold annually (excluding additional permits required for stocked trout fishing) resulting in an estimated 1,600 fishing trips.

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To provide enhanced public accessibility to fishing sites, eight impoundments have wheelchair-accessible fishing facilities, two impoundments have concrete boat launch areas, and six others have gravel boat launch areas. In accordance with FAPH fishing regulations, privately owned boats may be used for fishing on FAPH waters.

The DPW-ENRD (Fish & Wildlife Branch) manages the Fishing Program (see Chapter 8 of this INRMP).

15.5.3 TRAPPING

FAPH offers nine (9) trapping areas spanning more than 40,000 acres. Trapping is a recreational and resource management activity that can reduce government costs associated with controlling animal populations. Trapping has also been proven to reduce predation on ground or low nesting bird species whose populations are in decline, such as quail and neo-tropical migratory bird species.

FAPH trapping policies are set forth in FAPH Regulation 200-11 (Appendix G) and are consistent with the Commonwealth of Virginia Trapping Regulations. Individuals that wish to trap on FAPH must purchase an installation trapping permit and hold a valid trapping license issued by VDGIF to trap within the Commonwealth. Unlike hunting and fishing, trapping permits are limited and are allocated through a lottery.

The DPW-ENRD (Fish & Wildlife Branch) manages the Trapping Program (see Chapter 8 of this INRMP).

15.5.4 WATCHABLE WILDLIFE

Watchable wildlife opportunities consist of activities that allow for the viewing of wildlife in a non-interactive manner. FAPH offers three nature trails within the vicinity of the Beaver Dam Picnic Area that recreational users can enjoy for trail walking, mountain biking, and wildlife viewing:

a. The Beaver Dam Loop Trail is a one mile, improved trail around Beaver Dam Pond with educational signage pertaining to the importance of the Chesapeake Bay, native species, and differing habitats.

b. The Headquarters to Family Housing Trail is a 0.5 mile, semi-improved trail that connects the Post's Headquarters area to the Post's Family Housing Area.

c. The Beaver Dam Nature Trail is a 0.75 mile, largely unimproved forest trail festooned with signage on habitat niches, native species, and biodiversity.

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The DPW-ENRD Fish & Wildlife Branch manages the Watchable Wildlife Program (see Chapter 8 of this INRMP).

15.5.5 LODGING AND CAMPING

FAPH offers Recreational Lodging to authorized military, retirees, DOD civilian identifications cardholders, and their guests. The Lodge is a historic 1950's era hunting retreat and is the most sought after recreational facility due to its aesthetic and cultural appeal as well as the amenities it offers. The Lodge is designed for large groups and can accommodate up to 19 guests with nine bedrooms. It contains a commercial kitchen, dining room, and great room. The Lodge overlooks Travis Lake and is in walking distance of several fishing areas. Other cabins are available for small groups or families. These include Hilltop Cabins at Travis Lake, Travis Lake Cottages, Cabins at Bullocks Pond, Beaverdam Cottage, Heth Area Farmhouses, and Dolly Hill Guesthouse, Headquarters Area. All of these structures are just minutes from excellent outdoor recreation areas. Named for Lt. General A.P. Hill's horse, Champ's Camp RV Park has 45 RV sites with both 30 and 50 amp electric as well as water and sewer hook-ups. The air conditioned RV Service Center offers DirecTV, WiFi access, bathrooms with showers, and laundry facilities. In addition there are six travel trailers on permanent sites that are available for rent.

Primitive camping (i.e. tent camping) is allowed on a limited basis adjacent to Champ's RV park.

Campfires are only allowed in the primitive camping area and only with a permit from the installation Fire Department.

15.5.6 PICNICKING

FAPH offers picnicking opportunities at the Beaverdam Picnic Area and the Headquarters Picnic Area. The Beaverdam Picnic Area contains one large pavilion, 21 tables, restrooms, an activity field, and a 1.0 mile walk/run track. Headquarters Picnic Area has one small pavilion, 18 picnic tables, an activity field, and a large shade tree. These areas are available for group rental by the day.

15.5.7 RUNNING AND BIKING

The FAPH community is actively engaged in physical fitness training. Enjoyment of these recreational and fitness activities is enhanced when done in natural settings where vehicle noise, pollution, and traffic are minimized. Runners and bikers are required to check in and out via the iSportsman system to ensure the safety of the recreators as well as the military training on FAPH.

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15.5.8 OFF-ROAD VEHICLES

There are no areas designated at FAPH for the use of off-road motorized recreational vehicles (ORVs). The use of ORVs on the highly erosive soils at FAPH is not compatible with Chesapeake Bay water quality protection needs or the need to maintain the functionality of trails for authorized training and land management activities.

15.5.9 OUTDOOR EDUCATION

The Fish and Wildlife Branch staff members, time permitting, provide educational information to local schools and scout groups concerning outdoor careers and natural history interpretation. Annual presentations are given at local Wild Game Dinners and National Wildlife Refuges.

The Garrison hosts a large annual Earth Day celebration planned by the DPW ENRD. More than 800 local school children attend the event that includes venders from local, state, and national conservation and environmental organizations. The students receive an outdoor educational experience by hiking interpretive nature trails, planting trees, interacting with professional natural resource managers, and learning the importance of all facets of natural resources.

15.5.10 PAINTBALL

A paintball arena is available for use by the general public for a nominal fee. Paintball equipment can be rented and/or paintballs purchased as well.

15.5.11 ARCHERY

An archery range is available for use by the general public for a day or season pass. Bows and arrows may be rented and/or paper targets purchased.

15.6 RECREATIONAL EQUIPMENT RENTAL

DFMWR offers rental of equipment to enhance users' enjoyment of FAPH's natural resources. Everything needed for fishing (excluding bait) is available for rent at the Outdoor Recreation building including canoes, jon boats, kayaks, trolling motors, life vests, and fishing poles. The privately owned recreational vehicle storage lot is located adjacent to the DPW ENRD Natural Resources Annex located at the corner of A.P. Hill Drive and Lee Drive. Privately owned boats may be used for recreational paddling on FAPH but only in accordance with applicable FAPH regulations (Appendix H).

15.7 DISABLED SPORTSMAN ACCESS

FAPH offers several opportunities for disabled sportsman to participate in outdoor recreation, including:

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a. Wheelchair accessible fishing piers at several ponds

b. Wheelchair accessible hunting blinds

c. A wheelchair accessible nature trail at Beaverdam Pond

d. Hydraulic wheelchair lifts for elevating disabled sportsman to equivalent tree stand height

e. A dedicated hunting area for disabled sportsman

15.8 SUMMARY

FAPHA offers an abundance of outdoor recreational opportunities available to the military community, civilian staff, and the public at large, subject to military mission requirements. All dispersed recreational activities shall be conducted in accordance with this INMRP and all applicable laws and regulations.

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16.0 IMPLEMENTATION

16.1 COMPONENT PLANS

Each INRMP Chapter that describes the day-to-day and long term operational perspectives of a specific functional / program area (e.g., Forest Management, Fish & Wildlife Management, Endangered Species Management) germane to natural resources management on FAPH constitutes a Component [management] Plan. Each Component Plan is implemented to meet overall INRMP goals and objectives.

16.2 NATURAL RESOURCES MANAGEMENT BUDGETING

This INRMP provides long-term natural resources management direction in the form of scheduled practices (recurring and non-recurring projects and supporting actions) that have been translated into annual budget proposals. Funds are allocated annually based on budget proposals and congressional intent. While management goals and objectives are long-term, this INRMP constitutes the implementation strategy toward those goals and objectives over the next five years. To fully implement the goals and objectives of the INRMP, annual budgets are programmed into the Army's Conservation Budgets and Conservation Program Objective Memorandum. U.S. Army Headquarter policies and guidance resources direct installation level conservation programming and budgeting. FAPH shall implement this INRMP, subject to the availability of funding. Non-appropriated funds will also be leveraged to meet INRMP goals and objectives when possible, as appropriate.

16.3 NATURAL RESOURCES MANAGEMENT STAFFING

To successfully implement the INRMP, a combination of government manpower, contract labor, and volunteers is required. In addition to the nine federal man-years currently expended on the program (Table 16-1), the current program uses approximately eight (8) contract man-years annually. Additional man-years of support are provided by the installation DES (wildland fire management and conservation law enforcement) annually, by the Pest Control program (invasive species management) annually, by the ISO annually, and by the DPW ENRD Compliance Program (wetlands management) annually.

Table 16-1. FAPH Natural Resources Management Program Staffing

Grade	Position Title	No. of Positions +
GS-12	Chief, Environmental & Natural Resources Division	1
GS-12	Natural Resources Specialist	1
GS-11	Natural Resources Specialist	1
GS-09	Forester	1

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Table 16-1. FAPH Natural Resources Management Program Staffing		
Grade	**Position Title**	**No. of Positions +**
GS-11	Forestry Planner	1
GS-07	Forestry Technician	2
GS-11	Wildlife Biologist	1
GS-09	Natural Resources Specialist	1
	TOTAL	**9**
+ Full-time Department of Army Civilian Employees		

16.4 ANNUAL COORDINATION

Natural resources management is a dynamic process, and as such, management plans often require frequent reviews and updates. Following completion of the INRMP, the Natural Resources Program Manager will conduct periodic reviews and updates to account for changes in the military mission, condition of natural resources, the ecosystem, and regulatory requirements. In order to comply with regulations and ensure the continued usefulness of this plan, the Natural Resources Program Manager will conduct an annual review cycle and will update the INRMP annually. The Natural Resource Program Manager will review and update the INRMP annually as identified to assess the effectiveness of integration linkages and bring in partners for guidance and knowledge as necessary. Specifically, annual meetings/correspondence with the USFWS and VDGIF will produce feedback, which will then be incorporated into the annual update process. ENRD will present the findings from this annual review to update senior Post leaders of the status and effectiveness of the INRMP. Annual update coordination and signatures can be found in Appendix L.

16.5 MONITORING INRMP IMPLEMENTATION

The Annual Review cycle identified above will also be maintained as part of the administrative record for implementation of the Sikes Act. Additionally, completion and status of INRMP objectives will be tracked in a database. The Natural Resources Program Manager will review these documents at each INRMP Review Cycle and the Chief of ENRD will enforce compliance with the INRMP.

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17.0 SUMMARY

This INRMP identifies FAPH's approach to implementing natural resources and biodiversity management in support of military mission requirements and in a manner that meets all statutory and regulatory requirements.

Implementation of this INRMP will require the integration across FAPH's organizational, functional, and programmatic areas to achieve stated goals and objectives in cooperation with federal, state, and non-governmental entities.

In conjunction with the USFWS and VDGIF, FAPH will coordinate annually on the implementation of this INRMP and review this INRMP for Operation and Effect every five years.

Implementation of this INRMP is subject to the availability of funding.

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APPENDIX A – APPLICABLES LAWS, REGULATIONS, AND GUIDANCE PERTAINING TO NATURAL RESOURCES MANAGEMENT ON FORT A.P. HILL

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FEDERAL
Federal Insecticide, Fungicide, and Rodenticide Act, *as amended* (7 U.S.C. Sec. 136 et seq.)
Leases: Non-excess property of military departments (10 U.S.C. Sec. 2667 / 32 CFR 623, 643, 736)
The Anadromous Fish Conservation Act (16 U.S.C. Sec. 757)
The Animal Damage Control Act (7 U.S.C. Sec. 426)
The Bald and Golden Eagle Protection Act, *as amended* (16 U.S.C. Sec. 668 / 50 CFR 22)
The Clean Water Act, *as amended* (33 U.S.C. Sec. 1251 / 33 CFR 320-332; 40 CFR 22, 231-232, 332)
The Emergency Planning and Community Right to Know Act (42 U.S.C Sec. 11004 et seq. / 40 CFR 350-
The Endangered Species Act, *as amended* (16 U.S.C. Sec. 3371 et seq. / 50 CFR 17 & 50 CFR 216-296;
The Engle Act (10 U.S.C. Sec. 2671 et seq.)
The Lacey Act, *as amended* (16 U.S.C. Sec. 3371 50 CFR 17)
The Migratory Bird Treaty Act (16 U.S.C. 703-711 / 50 CFR 10, 20-21)
The National Environmental Policy Act (43 U.S.C. Sec. 4321 et seq. / 40 CFR 1500)
The National Historic Preservation Act, *as amended* (16 U.S.C. 470 et seq. / 18 CFR 380)
The National Invasive Species Management Plan
The Non-indigenous Aquatic Nuisance Prevention and Control Act (16 U.S.C. Sec. 4701)
The Noxious Weed Control and Eradication Act, *as amended* (7 U.S.C. Sec. 7781 / 20 CFR 408)
The Plant Protection Act, *as amended* (7 U.S.C 7701 / 7 CFR 300-380)
The Readiness and Environmental Protection Initiative (10 U.S.C. Sec. 2684)
The Resource Conservation and Recovery Act, *as amended* (42 U.S.C. Sec. 6901 et seq. / 40 CFR 3, 9,
The Sikes Act *as amended* (16 U.S.C. Sec. 670 / 32 CFR 190)
32 CFR 651, *Environmental Analysis of Army Actions* , March 2002
Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management (65 Fed.
U.S. Environmental Protection Agency – Chesapeake Bay Total Maximum Daily Loads
Executive Order 11472 – *Establishing the Cabinet Committee on the Environment and the Citizens Advisory Council on Environmental Quality, as amended* (34 Fed. Reg. 8693)
Executive Order 11988, *as amended – Floodplain Management* (Fed. Reg. 26951)
Executive Order 11990, *as amended – Protection of Wetlands* (Fed. Reg. 26961)
Executive Order 12906 - *Coordinating Geographic Data Acquisition and Access: The National Spatial*
Executive Order 12962 – *Recreational Fisheries, as amended* (60 Fed. Reg. 30769)
Executive Order 13112 – *Invasive Species* (64 Fed. Reg. 6183)
Executive Order 13186 - *Responsibilities of Federal Agencies To Protect Migratory Birds* (66 Fed. Reg.
Executive Order 13443 – *Facilitation of Hunting Heritage and Wildlife Conservation* (72 Fed. Reg.
Executive Order 13508 - *Chesapeake Bay Protection and Restoration* (74 Fed. Reg. 23099)
Executive Order 13693 – *Planning for Federal Sustainability in the Next Decade* (80 Fed. Reg. 15871)
Executive Order 13575 – *Establishment of the White House Rural Council* (79 Fed. Reg. 34841)

FEDERAL (CON'T.)
National Bald Eagle Management Guidelines
Federal Interagency MOU for Implementation of the Endangered Species Act
Federal Native Plant Conservation Memorandum of Understanding
DOD GUIDANCE
DOD-USDA MOA – *Food, Agriculture, Pest Management, Nutrition, Related Homeland Security Requirements, and Other Research of Mutual Interest*
Conserving Biodiversity on Military Lands: *A Guide for Natural Resource Managers*
Defense Finance Accounting Service – Indianapolis Regulation 37-1, *Finance and Accounting Policy Implementation* , Chapter 14, "Sales and Revenues," (June 2014)
Department of Defense Financial Management Regulation 7000.14-R, Volume 11A, Chapter 16 (August
Department of Defense Instruction 4715.03, *Natural Resource Conservation Program*
DOD-Bat Conservation International MOU – *To Promote Bat Conservation* (extended June 2011)
DOD-USFWS-IAFWA Memorandum of Understanding – *Cooperative Integrated Natural Resource Management Program on Military Installations*
DOD / USFWS Memorandum of Understanding – *To Promote the Conservation of Migratory Birds*
DOD and The Nature Conservancy Cooperative Agreement
DOD Directive 3020.40 - *Defense Critical Infrastructure Program*
DOD Financial Management Regulation 7000.14-R, Volume 11A, Chapter 16, March 1997
DOD Instruction 4150.7 - *Pest Management Program*
DOD Instruction 4715.03 - *Natural Resources Conservation Program*
DOD Instruction 4715.16 - *Cultural Resources Management*
DOD Instruction 4715.17 - *Environmental Management Systems*
DOD Instruction 6055.06, DOD Fire and Emergency Services Program
DOD Instruction 6055.17 Installation Emergency Management Program
DOD Instruction 1015.10 – *Military Morale, Welfare, and Recreation (MWR) Programs*
DOD Instruction 5525.15 – *Law Enforcement Standards and Training in the DOD*
DOD Instruction 5525.17 - *Conservation Law Enforcement Program*
DOD-The Nature Conservancy Cooperative Agreement - *To Maintain Biodiversity on DOD Lands*
DOD-EPA MOU – *Integrated Pest Management*
DOD-USDA MOU – *Forest Insect & Disease Suppression*
DOD-USDA MOU – *Food, Agriculture, Pest Management, Nutrition, Related Homeland Security Requirements, and Other Research of Mutual Interest*
DOD-USDA MOU – *Animal Damage Control*
Strategic Plan for Amphibian and Reptile Conservation and Management on DOD Lands
DOD Memorandum – DOD policy to Use Pollinator Friendly Management Prescriptions (5 September

DOD GUIDANCE (CON'T.)
DOD – Pollinator Partnership MOU - To Promote the Conservation and Management of Pollinators
U.S. ARMY GUIDANCE
Army Regulation 350-52 - *Army Training Support System*
Army Regulation 115-13 - *Installation Geographic Information and Services*
Army Regulation 190-45 – *Law Enforcement Reporting*
Army Regulation 200-1 - *Environmental Quality: Environmental Protection and Enhancement*
Army Regulation 215 – 1 *Morale, Welfare, and Recreation: Military Morale, Welfare, and Recreation Programs and Non-appropriated Fund Instrumentalities*
Army Regulation 405-80 - *Management of Title and Granting Use of Real Property*
Army Regulation 405-90 - *Disposal of Real Estate*
Army Regulation 420-1 - *Army Facilities Management*
Army Guidance - *Procedures for Installation-Conducted Timber Sales* , June 2004
Army Memorandum – *Policy Guidance for Pest Management Services on Agricultural Out-leases*
Army Policy Guidance - *Management and Control of Invasive Species*
Army Policy Memorandum - *Operationalizing Sustainability*
Army Policy Guidance: *Reimbursable Agricultural/Grazing and Forestry Programs* , August 1999
Army Wildland Fire Policy Guidance, September 2002
Department of the Army Pamphlet 420-7 – *Natural Resources Management-Land, Forest and Wildlife*
Memorandum from the Principal Deputy Assistant Secretary of the Army (Installations and Environment), *Army Forest Conservation Policy*, January 2001
U.S. Army Chesapeake Bay Strategy
PWTB 200-1-19 - *Guidance for Non-native Invasive Plant Species on Army Lands: Eastern United*
PWTB 200-1-131 - *Non-Native Invasive Species Management Guidelines*
Army Techniques Publication 3-34.80- Geospatial engineering
Army Techniques Publication 3-37.34 – Survivability Operations
Army Techniques Publication 2-01.3 - Intelligence Preparation of the Battlefield / Battlespace
U.S. Army Installation Management Command Campaign Plan (2012-2020)
U.S. Army Strategy for the Environment
COMMONWEALTH OF VIRGINIA
Virginia State Water Control Law (§§ VA. CODE ANN. 62.1-44.2 to -44.33:28 / 9 VAC 25, 31, 830, 840, 870)
Virginia Pest Law (§§ VA. CODE ANN. 3.2-700 to -713)
Virginia Noxious Weed Law (§§VA. CODE ANN. 3.2-800 to -809 / 2 VAC 5- 317)
Virginia Non-indigenous Aquatic Nuisance Species Act (§§VA. CODE ANN. 29.1-571 to -577)
Virginia Pesticide Control Act (VA. CODE ANN. §§ 3.2-3900 to -3913 / 2VAC5-670)

COMMONWEALTH OF VIRGINIA (CON'T.)
Virginia Department of Forestry Best Management Practices for Water Quality (Technical Manual)
The Virginia Endangered Species Act (VA. CODE ANN. §29.1-563 to -570)
The Virginia Endangered Plant and Insect Species Act (VA. CODE ANN. §3.2-1000 to 3.2-1011)
Virginia Invasive Species Management Plan
Virginia Department of Conservation and Recreation Natural Heritage Plan

APPENDIX B – FLORA SPECIES LIST FOR FORT A.P. HILL

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APPENDIX B - FLORA SPECIES LIST FOR FORT A.P. HILL

Genus	Species	Common Name
Acalypha	*gracilens*	copperseed
Acer	*negundo*	box elder
Acer	*rubrum*	red maple
Achillea	*millefolium*	yarrow
Adiantum	*pedatum*	maidenhair fern
Agrimonia	*pubescens*	soft agrimony
Agrostis	*gigantea*	redtop
Ailanthus	*altissima*	tree-of-heaven
Albizia	*julibrissin*	mimosa
Aldrovanda	*vesiculosa*	water-wheel
Alnus	*serrulata*	tag alder
Ambrosia	*artemisiifolia*	rag weed
Amelanchier	*arborea*	service berry; June berry
Amphicarpaea	*bracteata*	hog peanut
Anagallis	*arvensis*	scarlet pimpernel
Andropogon	*glomeratus*	bushy bluestem
Andropogon	*ternarius*	splitbeard bluestem
Andropogon	*virginicus*	broom sedge
Antennaria	*plantaginifolia*	plantain pussytoes
Anthemis	*arvensis*	corn chamomile
Anthemis	*cotula*	dogfennel
Anthoxanthum	*odoratum*	sweet vernal grass
Apios	*americana*	common ground-nut
Aplectrum	*hyemale*	putty-root
Apocynum	*androsaemifolium*	spreading dogbane
Apocynum	*cannibinum*	Indian hemp; hemp dogbane
Arabidopsis	*thaliana*	mouse-ear cress
Aralia	*spinosa*	Hercules club; devil's walking stick
Arisaema	*triphyllum*	Indian Turnip
Arthraxon	*hispidus*	Small Carp Grass
Arundinaria	*tecta*	Switchcane
Asarum	*canadense*	Canada Ginger
Asclepias	*amplexicaulis*	Clasping Milkweed
Asclepias	*incarnata*	swamp milkweed
Asclepias	*tuberosa*	butterfly-weed
Asimina	*triloba*	pawpaw
Asparagus	*officinalis*	garden asparagus
Asplenium	*platyneuron*	ebony spleenwort
Athyrium	*filix-femina*	lady fern
Athyrium	*pycnocarpan*	narrow-leaved glade fern

Genus	Species	Common Name
Athyrium	*thelypterioides*	silvery glade fern
Baptisia	*tinctoria*	wild indigo
Barbarea	*verna*	early winter cress
Bartonia	*virginica*	bartonia
Berberis	*bealei*	Beale's mahonia
Berberis	*thunbergii*	Japanese barberry
Betula	*nigra*	river birch
Boehmeria	*cylindrica*	false nettle
Botrychium	*dissectum*	common grapefern
Botrychium	*virginianum*	rattlesnake fern
Brasenia	*schreberi*	watershield
Bromus	*erectus*	erect brome
Bromus	*inermis*	smooth brome
Bromus	*sterilis*	poverty brome
Broussonetia	*papyrifera*	paper mulberry
Callitriche	*heterophylla*	water-starwort
Calycanthus	*floridus*	eastern sweet shrub
Campsis	*radicans*	trumpet vine
Cardamine	*concatenata*	cutleaf toothwort
Cardamine	*hirsuta*	hoary bitter-cress
Carduus	*nutans*	nodding thistle
Carduus	*nutans*	nodding thistle
Carex	*atlantica*	prickly bog sedge
Carex	*bullata*	button sedge
Carex	*canescens*	silvery sedge
Carex	*caroliniana*	Carolina sedge
Carex	*collinsii*	Collins sedge
Carex	*crinita*	long-haired sedge
Carex	*debilis*	white edge sedge
Carex	*folliculata*	northern long sedge
Carex	*intumescens*	greater bladder sedge
Carex	*laevivaginata*	smoothsheath sedge
Carex	*laxiculmis*	spreading sedge
Carex	*lonchocarpa*	southern long sedge
Carex	*lupulina*	hop sedge
Carex	*lurida*	shallow sedge
Carex	*venusta*	dark green sedge
Carpinus	*caroliniana*	ironwood
Carya	*cordiformis*	bitternut hickory
Carya	*glabra*	pignut hickory
Carya	*illinoiensis*	pecan
Carya	*pallida*	pale hickory
Carya	*tomentosa*	mockernut hickory

Genus	Species	Common Name
Cassia	*fasciculata*	partridge pea
Cassia	*marilandica*	wild senna
Cassia	*nictitans*	wild sensitive plant
Castanea	*chinensis*	Chinese chestnut
Castanea	*dentata*	American chestnut
Castanea	*pumila*	chinquapin
Celastrus	*orbiculatus*	Oriental bittersweet
Celtis	*occidentalis*	hackberry
Centaurea	*stoebe*	spotted knapweed
Centrosema	*virginianum*	spurred butterfly pea
Cephalanthus	*occidentalis*	button bush
Ceratophyllum	*muricatum*	hornwort
Cercis	*canadensis*	redbud
Chasmanthium	*laxum*	slender woodoats
Chelone	*glabra*	turtlehead
Chimaphila	*maculata*	spotted wintergreen
Chimaphila	*umbellata*	pipsissewa
Chionanthus	*virginicus*	white fringetree
Chrysopsis	*mariana*	Maryland golden aster
Cichorium	*intybus*	chicory
Cimicifuga	*racemosa*	black cohosh
Cinna	*arundinacea*	common wood reed
Circaea	*lutetiana*	enchanters nightshade
Claytonia	*virginica*	Virginia springbeauty
Clematis	*virginiana*	virgins bower
Clethra	*alnifolia*	coast sweet pepper-bush
Clitoria	*mariana*	Atlantic pigeonwings
Collinsonia	*canadensis*	northern horse-balm
Conoclinium	*coelestinum*	mistflower
Consolida	*ajacis*	doubtful knights-spur
Convolvulus	*arvensis*	field bindweed
Conyza	*canadensis*	butterweed
Cornus	*amomum*	silky dogwood
Cornus	*florida*	flowering dogwood
Coronilla	*varia*	crown vetch
Corylus	*americana*	hazelnut
Cosmos	*bipinnatus*	common cosmos
Crocanthemum	*bicknellii*	plains frostweed
Croton	*glandulosus*	tooth-leaved croton
Cryptotaenia	*canadensis*	honewort
Cunila	*orginoides*	stone-mint
Cuscuta	*compacta*	compact dodder
Cuscuta	*gronovii*	common dodder

Genus	Species	Common Name
Cynoglossum	*virginianum*	wild comfrey
Cyperus	*odoratus*	fragrant flat sedge
Cyperus	*retrorsus*	pine barren flat sedge
Cyperus	*strigosus*	strawcolored flat sedge
Cypripedium	*acaule*	pink moccasin flower
Cypripedium	*acaule*	Pink Lady's Slipper
Dactylis	*glomerata*	orchard grass
Danthonia	*sericea*	curleygrass
Danthonia	*spicata*	poverty grass
Datura	*stramonium*	jimson weed
Daucus	*carota*	Queen Anne's lace
Decodon	*verticillatus*	water loosestrife
Dendrolycopodium	*obscurum*	common ground-pine
Desmodium	*glutinosum*	point-leaved tick trefoil
Desmodium	*nudiflorum*	naked-flowered tick trefoil
Desmodium	*pauciflorum*	few-flowered tick trefoil
Dianthus	*armeria*	deptford pink
Dichanthelium	*boscii*	Bosc's panic grass
Dichanthelium	*clandestinum*	deertongue
Dichanthelium	*commutatum*	variable panic grass
Dichanthelium	*dichotomum*	cypress panic grass
Dichanthelium	*ensifolium*	swordleaf panic grass
Dichanthelium	*latifolium*	broadleaf rosette grass
Dichanthelium	*ravenelii*	Ravenel's rosette grass
Dichanthelium	*scoparium*	velvet panic grass
Digitaria	*ciliaris*	Southern crabgrass
Digitaria	*cognata*	mountain hairgrass
Digitaria	*filiformis*	slender crabgrass
Digitaria	*ischaemum*	smooth crabgrass
Diodia	*teres*	buttonweed
Diospyros	*virginiana*	persimmon
Dipsacus	*fullonum*	Fuller's teasel
Draba	*verna*	whitlow-grass
Drosera	*rotundifolia*	round-leaved sundew
Duchesnea	*indica*	Indian strawberry
Dulichium	*arundinaceum*	threeway-sedge
Elaeagnus	*umbellata*	autumn olive
Eleocharis	*engelmannii*	Engelmann's spikerush
Eleocharis	*obtusa*	blunt spikerush
Eleocharis	*tortilis*	twisted spikerush
Elephantopus	*carolinianus*	Carolina elephants foot
Elephantopus	*tomentosus*	devil's grandmother
Eleusine	*indica*	goose grass

Genus	Species	Common Name
Elymus	*virginicus*	Virginia wild rye
Epifagus	*virginiana*	beech-drops
Epigaea	*repens*	trailing arbutus
Eragrostis	*curvula*	weeping lovegrass
Eragrostis	*hirsuta*	bigtop lovegrass
Eragrostis	*pilosa*	Indian lovegrass
Eragrostis	*spectabilis*	purple lovegrass
Erechtites	*hieraciifolia*	fireweed
Erianthus	*alopecuroides*	silver plumegrass
Erigeron	*annuus*	eastern daisy fleabane
Erigeron	*strigosus*	prairie fleabane
Eriophorum	*virginicum*	cotton grass
Euonymus	*americanus*	strawberry-bush
Eupatoriadelphus	*fistulosus*	queen-of-the-meadow
Eupatorium	*capillifolium*	dog-fennel
Eupatorium	*hyssopifolium*	hyssopleaf thoroughwort
Eupatorium	*mohrii*	Mohr's thoroughwort
Eupatorium	*pilosum*	vervain thoroughwort
Eupatorium	*rotundifolium*	roundleaf thoroughwort
Euphorbia	*corollata*	flowering spurge
Euphorbia	*ipecacuahne*	Carolina ipepac
Euphorbia	*maculata*	spotted spurge
Euthamia	*graminifolia*	flat-topped goldenrod
Fagus	*grandifolia*	beech
Festuca	*subverticillata*	nodding fescue
Fragaria	*virginiana*	wild strawberry
Fraxinus	*americana*	American ash
Fuirena	*squarrosa*	hairy umbrella-sedge
Galactia	*regularis*	milk pea
Galium	*aparine*	cleavers
Galium	*boreale*	northern bedstraw
Galium	*circaezans*	forest bedstraw
Galium	*obtusum*	blunt-leaf bedstraw
Galium	*pilosum*	hairy bedstraw
Galium	*tinctorum*	southern three-lobed bedstraw
Galium	*triflorum*	sweet-scented bedstraw
Gaylussacia	*frondosa*	blue huckleberry; dangleberry
Gaylussacia	*ursina*	bear huckleberry
Geranium	*carolinianum*	Carolina geranium
Gleditsia	*triacanthos*	honey locust
Glyceria	*obtusa*	Atlantic mannagrass
Glyceria	*striata*	fowl manna grass
Gnaphalium	*obtusifolium*	rabbit tobacco

Genus	Species	Common Name
Goodyera	*pubescens*	downy rattlesnake plantain
Gymnocladus	*dioicus*	Kentucky coffee tree
Gymnopogon	*ambiguus*	beardgrass
Habenaria	*cristata*	crested fringed orchid
Hackelia	*virginiana*	beggars lice
Hedera	*helix*	English ivy
Helenium	*brevifolium*	shortleaf sneezeweed
Helonias	*bullata*	swamp pink
Hepatica	*nobilis*	round-lobed hepatica
Hexastylis	*virginica*	wild ginger; little brown jug
Hibiscus	*moscheutos*	rose mallow
Hieracium	*gronovii*	beaked hawkweed
Houstonia	*caerulea*	azure bluet
Houstonia	*longifolia*	long-leaved houstonia
Houstonia	*purpurea*	large houstonia
Houstonia	*pusilla*	tiny bluet
Houstonia	*tenuifilia*	narrow-leaved houstonia
Hypericum	*canadense*	Canada St. Johnswort
Hypericum	*drummondi*	nits-and-lice
Hypericum	*gentianoides*	pineweed
Hypericum	*hypericoides*	St. Andrews cross
Hypericum	*perforatum*	common St. Johnswort
Hypericum	*punctatum*	spotted St. Johnswort
Hypochaeris	*radicata*	cats ear
Hystrix	*patula*	bottlebrush grass
Ilex	*opaca*	holly
Ilex	*verticillata*	black alder
Impatiens	*capensis*	spotted touch-me-not
Impatiens	*pallida*	touch-me-not
Ipomoea	*coccinea*	small red morning glory
Ipomoea	*hederacea*	ivy-leaved morning glory
Ipomoea	*pandurata*	man-root
Iris	*domestica*	blackberry lily
Isotria	*medeoloides*	small whorled pogonia
Isotria	*verticillata*	large whorled pogonia
Itea	*virginica*	Virginia willow
Juglans	*nigra*	black walnut
Juncus	*acuminatus*	tapertip rush
Juncus	*caesariensis*	New Jersey rush
Juncus	*canadensis*	Canada rush
Juncus	*effusus*	soft rush
Juncus	*tenuis*	path rush
Juniperus	*communis*	common juniper

Genus	Species	Common Name
Juniperus	*virginiana*	red-cedar
Kalmia	*angustifolia*	sheep laurel
Kalmia	*latifolia*	mountain laurel
Lachnocaulon	*anceps*	bog-buttons
Lactuca	*canadensis*	Canada lettuce
Lamium	*amplexicaule*	henbit
Leersia	*oryzoides*	rice cutgrass
Leersia	*virginica*	white grass
Lemna	*valdiviana*	duckweed
Lepidium	*virginicum*	poor-mans pepper
Lespedeza	*bicolor*	bicolor lespedeza
Lespedeza	*cuneata*	sericea
Lespedeza	*procumbens*	trailing bush clover
Lespedeza	*repens*	creeping bush clover
Lespedeza	*striata*	Japanese clover
Lespedeza	*thunbergii*	Thunberg's lespedeza
Lespedeza	*virginica*	slender bush clover
Leucanthemum	*vulgare*	ox-eye daisy
Leucothoe	*racemosa*	fetter-bush
Liatris	*squarrosa*	scaly blazingstar
Ligustrum	*obtusifolium*	blunt-leafed privet
Ligustrum	*sinense*	Chinese privet
Lilium	*superbum*	Turks cap lily
Linaria	*canadensis*	toad-flax
Linaria	*vulgaris*	butter-and-eggs
Lindera	*benzoin*	spicebush
Lindernia	*dubia*	false pimpernel
Liparis	*lilifolia*	lily leaved twayblade
Liparis	*loeselii*	yellow widelip orchid
Liquidambar	*styraciflua*	sweetgum
Liriodendron	*tulipifera*	tulip tree
Lobelia	*cardinalis*	cardinal flower
Lobelia	*georgiana*	Georgia lobelia
Lobelia	*inflata*	Indian tobacco
Lobelia	*puberula*	downy lobelia
Lonicera	*canadensis*	fly-honeysuckle
Lonicera	*japonica*	Japanese honeysuckle
Lonicera	*tartartica*	Tartarian honeysuckle
Ludwigia	*alternifolia*	seedbox
Ludwigia	*palustris*	water purslane
Lupinus	*perennis*	wild lupine
Luzula	*acuminata*	hairy woodrush
Luzula	*bulbosa*	wood rush

Genus	Species	Common Name
Luzula	*echinata*	hedgehog wood rush
Lycopodium	*clavatum*	staghorn clubmoss
Lycopus	*rubellus*	taperleaf water horehound
Lycopus	*uniflorus*	northern bugleweed
Lycopus	*virginicus*	Virginia bugleweed
Lyonia	*ligustrina*	male-berry
Lyonia	*mariana*	stagger-bush
Lysimachia	*ciliata*	fringed loosestrife
Lysimachia	*terrestris*	swamp loosestrife
Maclura	*pomifera*	osage orange
Magnolia	*virginiana*	sweet bay
Malaxis	*unifolia*	green adders-mouth orchid
Malus	*pumila*	common apple
Medeola	*virginiana*	Indian cucumber-root
Medicago	*lupulina*	black medic
Menispermum	*canadense*	Canadian moonseed
Microstegium	*vimineum*	Japanese stilt-grass
Mikania	*scandens*	climbing hempweed
Mimulus	*alatus*	sharpwing monkey flower
Mitchella	*repens*	patridge berry
Monarda	*punctata*	horsemint
Monotropa	*uniflora*	Indian pipe
Morella	*cerifera*	wax myrtle
Morus	*rubra*	red mulberry
Murdannia	*keisak*	wartremoving herb
Myosotis	*macrosperma*	large-seed forget-me-not
Nuphar	*luteum*	spatter-dock
Nuphar	*odorata*	water-lily
Nyssa	*biflora*	swamp tupelo
Nyssa	*sylvatica*	black tupelo; black gum
Obolaria	*viriginica*	pennywort
Oenothera	*biennis*	evening primrose
Oenothera	*laciniata*	cut-leaved primrose
Oldenlandia	*boscii*	Bosc's mille graines
Onoclea	*sensibilis*	sensitive fern
Opuntia	*humifusa*	prickly-pear
Orchis	*spectabilis*	showy orchid
Orchis	*spectabilis*	showy orchid
Orontium	*aquaticum*	golden club
Osmunda	*cinnamomea*	cinnamon fern
Osmunda	*regalis*	royal fern
Ostrya	*virginiana*	hop hornbeam
Oxalis	*dillenii*	slender yellow woodsorrel

Genus	Species	Common Name
Oxalis	*violacea*	violet wood sorrel
Oxydendrum	*arboreum*	sourwood
Panax	*quinquefolius*	American ginseng
Panicum	*amarum*	beach panic grass
Panicum	*anceps*	beaked panic grass
Panicum	*rigidulum*	redtop panic grass
Panicum	*verrucosum*	warty panic grass
Parnassia	*asarifolia*	grass of parnassus
Parthenocissus	*quinquefolia*	Virginia creeper
Paspalum	*dilatatum*	dallis grass
Paspalum	*laeve*	field paspalum
Paspalum	*setaceum*	thin paspalum
Passiflora	*incarnata*	maypops
Paulownia	*tomentosa*	royal paulownia
Peltandra	*virginica*	arrow arum
Penthorum	*sedoides*	ditch stonecrop
Perilla	*frutescens*	beefstake plant; perilla-mint
Phragmites	*australis*	common reed
Phytolacca	*americana*	pokeberry
Pinus	*echinata*	shortleaf pine
Pinus	*strobus*	white pine
Pinus	*taeda*	loblolly
Pinus	*virginiana*	Virginia pine
Pityopsis	*graminifolia*	narrowleaf silk aster
Plantago	*aristata*	buckhorn
Plantago	*lanceolata*	English plantain
Plantago	*major*	common plantain
Plantago	*virginica*	plantain
Platanthera	*clavellata*	small green wood orchid
Platanus	*occidentalis*	American sycamore
Poa	*cuspidata*	early bluegrass
Poa	*pratensis*	Kentucky bluegrass
Poa	*sylvestris*	forest bluegrass
Pogonia	*ophioglossoides*	rose pogonia orchids
Polygala	*incarnata*	pink milkwort
Polygala	*lutea*	orange milkwort
Polygonatum	*biflorum*	Solomons seal
Polygonum	*cuspidatum*	Japanese knotweed
Polygonum	*hydropiperoides*	false water-pepper
Polygonum	*pensylvanicum*	Pennsylvania smartweed
Polygonum	*persicaria*	ladys thumb
Polygonum	*punctatum*	dotted smartweed
Polygonum	*sagittatum*	arrow-leaved tearthumb

Genus	Species	Common Name
Polygonum	*setaceum*	coastal false water-pepper
Polygonum	*virginianum*	jumpseed
Polypremum	*polypremum*	juniper-leaf
Polystichum	*acrostichoides*	christmas fern
Pontederia	*cordata*	pickerelweed
Populus	*grandidentata*	large-toothed aspen
Potamogeton	*oakesianus*	oakes pondweed
Potamogeton	*oakesianus*	oakes pondweed
Potentilla	*canadense*	five-fingers; dwarf cinquefoil
Potentilla	*norvegica*	rough cinquefoil
Potentilla	*simplex*	common cinquefoil
Prunella	*vulgaris*	common selfheal
Prunus	*avium*	mazzard cherry; sweet cherry
Prunus	*munsoniana*	wild goose plum
Prunus	*serotina*	black cherry
Pteridium	*aquilinum*	bracken fern
Pueraria	*montana*	kudzu
Pueraria	*montana var. lobata*	kudzu
Pycnanthemum	*tenuifolium*	mountain mint
Pyrus	*calleryana*	Bradford pear
Pyrus	*pyrifolia*	Chinese pear
Quercus	*acutussima*	sawtooth oak
Quercus	*alba*	white oak
Quercus	*coccinea*	scarlet oak
Quercus	*falcata*	sothern red oak
Quercus	*laurifolia*	laurel oak
Quercus	*marilandica*	blackjack oak
Quercus	*michauxii*	swamp chestnut oak
Quercus	*nigra*	water oak
Quercus	*pagoda*	cherrybark oak
Quercus	*palustris*	pin oak
Quercus	*phellos*	willow oak
Quercus	*prinus*	chestnut oak
Quercus	*rubra*	northern red oak
Quercus	*stellata*	post oak
Quercus	*velutina*	black oak
Ranunculus	*bulbosus*	bulbous buttercup
Ranunculus	*hispidus*	hispid buttercup
Ranunculus	*recurvatus*	hooked crowfoot
Rhexia	*mariana*	Maryland meadow beauty
Rhexia	*virginica*	meadow beauty
Rhododendron	*canadense*	rhodora
Rhododendron	*maximum*	great laurel

Genus	Species	Common Name
Rhododendron	*viscosum*	swamp azalea
Rhus	*copallinum*	winged sumac
Rhus	*glabra*	smooth sumac
Rhynchosia	*tomentosa*	erect rhynchosia
Rhynchospora	*alba*	white beakrush
Rhynchospora	*capitellata*	beakrush
Rhynchospora	*gracilenta*	slender beakrush
Rhynchospora	*microcephala*	small head beakrush
Robinia	*pseudoacacia*	black locust
Rosa	*multiflora*	multiforal rose
Rosa	*palustris*	swamp rose
Rubus	*argutus*	southern blackberry
Rubus	*hispidus*	swamp dewberry
Rubus	*occidentalis*	black raspberry
Rubus	*phoenicolasius*	wineberry
Ruellia	*strepens*	wild petunia
Rumex	*acetosella*	sheep-sorrel
Rumex	*crispus*	curly dock
Sabatia	*angularis*	rose pink
Sabatia	*campanulata*	slender marsh pink
Sagittaria	*latifolia*	wapato
Salix	*nigra*	black willow
Salvia	*lyrata*	sage
Sambucus	*canadensis*	elderberry
Sanicula	*marilandica*	black snakeroot
Saponaria	*officinalis*	bouncing bet
Sarracenia	*purpurea*	purple pitcherplant
Sassafras	*albidum*	sassafras
Satureja	*vulgaris*	wild basil
Saururus	*cernuus*	lizards tail
Saxifraga	*virginiensis*	early saxifrage
Schizachyrium	*scoparium*	little bluestem
Schoenoplectus	*subterminalis*	water bulrush
Scirpus	*atrovirens*	green bulrush
Scirpus	*cyperinus*	wool-grass
Scirpus	*polyphyllus*	leafy bulrush
Scutellaria	*elliptica*	hairy skullcap
Scutellaria	*lateriflora*	blue skullcap
Senecio	*anonymus*	Appalachian ragwort
Senecio	*aureus*	golden ragwort
Sericocarpus	*asteroides*	toothed whitetop aster
Setaria	*faberi*	giant foxtail
Setaria	*parviflora*	knotroot foxtail

Genus	Species	Common Name
Setaria	*pumila*	yellow foxtail
Sherardia	*arvensis*	field-madder
Silphium	*astericus*	southern rosin-weed
Sisyrinchium	*angustifolium*	narrowleaf blue-eyed grass
Sisyrinchium	*arenicola*	coastal plain blue-eyed grass
Smilacina	*racemosa*	false Solomons-seal
Smilax	*glauca*	white-leaf greenbriar
Smilax	*hispida*	bristly greenbriar
Smilax	*rotundifolia*	roundleaf greenbriar
Solanum	*carolinense*	horse-nettle
Solidago	*caesia*	blue stemmed goldenrod
Solidago	*canadensis*	Canada goldenrod
Solidago	*flexicaulis*	zig-zag goldenrod
Solidago	*uliginosa*	bog goldenrod
Solidago	*ulmifolia*	elm-leaved goldenrod
Sorghum	*halepense*	Johnsongrass
Sparganium	*americanum*	bur-reed
Specularia	*perfoliata*	Venus looking glass
Sphagnum	*strictum*	straight peatmoss
Sphenopholis	*nitida*	wedge grass
Spiraea	*japonica*	Japanese spiraea
Spiraea	*tomentosa*	hardhack
Spiranthes	*cernua*	nodding ladies-tresses
Spiranthes	*ovalis*	lesser ladies tresses
Spiranthes	*praecox*	grass-leafed ladies tresses
Spirodela	*polyrhiza*	greater duckweed
Stellaria	*graminea*	common stitchwort
Stellaria	*media*	common chickweed
Stellaria	*pubera*	star chickweed
Stylosanthes	*biflora*	pencil flower
Symphoricarpos	*orbiculatus*	coralberry
Symphyotrichum	*concolor*	eastern silver aster
Symphyotrichum	*dumosum*	bushy aster
Symphyotrichum	*grandiflorum*	largeflower aster
Symphyotrichum	*novae-angliae*	New England aster
Symphyotrichum	*patens*	late purple aster
Symplocarpus	*foetidus*	skunk cabbage
Taraxacum	*officinale*	common dandelion
Taxodium	*distichium*	bald cypress
Teesdalia	*nudicaulis*	shepherds cress
Tephrosia	*spicata*	loose-flowered goats rue
Tephrosia	*virginiana*	goats rue
Thalictrum	*thalictroides*	windflower

Genus	Species	Common Name
Thelypteris	*hexagonoptera*	broad beech-fern
Thelypteris	*noveboracensis*	New York fern
Thelypteris	*simulata*	bog fern
Tiarella	*cordifolia*	foamflower
Tilia	*americana*	basswood
Tipularia	*discolor*	crane-fly orchid
Toxicodendron	*pubescens*	poison oak
Toxicodendron	*radicans*	poison ivy
Toxicodendron	*vernix*	poison sumac
Triadenum	*tubulosum*	lesser marsh St. Johnswort
Triadenum	*virginicum*	Virginia marsh St. Johnswort
Trichostema	*dichotomum*	blue curls
Tridens	*flavus*	purpletop
Trifolium	*arvense*	rabbit foot clover
Trifolium	*aureum*	golden clover
Trifolium	*campestre*	low hop clover
Trifolium	*pratense*	red clover
Trifolium	*repens*	white clover
Triodanis	*perfoliata*	round-leaved triodanis
Tripsacum	*dactyloides*	gamma grass
Tsuga	*canadensis*	eastern hemlock
Typha	*latifolia*	common cat-tail
Ulmus	*rubra*	slippery elm
Utricularia	*gibba*	conespur bladderwort
Utricularia	*purpurea*	purple bladderwort
Utricularia	*subulata*	zig zag bladderwort
Utricularia	*vulgaris*	common bladderwort
Uvularia	*perfoliata*	bellwort
Vaccinium	*formosum*	swamp highbush blueberry
Vaccinium	*fuscatum*	hairy highbush blueberry
Vaccinium	*pallidum*	Appalachian (lowbush) blueberry
Vaccinium	*stamineum*	deerberry
Valerianella	*radiata*	corn-salad
Verbascum	*blattaria*	moth mullein
Verbascum	*thapsus*	woolly mullein
Verbena	*urticifolia*	white vervain
Verbesina	*occidentalis*	southern flatseed-sunflower
Vernonia	*noveboracensis*	New York ironweed
Viburnum	*acerifolium*	maple-leaved viburnum
Viburnum	*dentatum*	northen arrowwood
Viburnum	*nudum*	possum-haw
Viburnum	*prunifolium*	black-haw
Vicia	*cracca*	cow vetch

Genus	Species	Common Name
Vinca	*minor*	periwinkle
Viola	*affinis*	sand violet
Viola	*bicolor*	field pansy
Viola	*primulifolia*	bog white violet
Viola	*sororia*	common blue violet
Vitis	*cinerea var. floridana*	Florida grape
Vitis	*rotundifolia*	muscadine
Wisteria	*floribunda*	Japanese wisteria
Wolffia	*columbiana*	Columbia watermeal
Wolffia	*papulifera*	water-meal

APPENDIX C – FAUNA SPECIES LIST AND CHECKLIST OF BIRDS FOR FORT A.P. HILL

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APPENDIX C - FAUNA SPECIES LIST FOR FORT A.P. HILL

Genus	Species	Common Name
	Mammals	
Blarina	*brevicauda*	northern short-tailed shrew
Canis	*latrans*	coyote
Castor	*canadensis*	North American beaver
Condylura	*cristata*	star-nosed mole
Cryptosis	*parva*	North American least shrew
Didelphis	*virginiana*	Virginia opossum
Eptesicus	*fuscus*	big brown bat
Glaucomys	*volans*	southern flying squirrel
Lasionycteris	*noctivagans*	silver-haired bat
Lasiurus	*borealis*	eastern red bat
Lasiurus	*cinereus*	hoary bat
Lontra	*canadensis*	North American river otter
Lynx	*rufus*	bobcat
Marmota	*monax*	groundhog
Mephitis	*mephitis*	striped skunk
Microtus	*pennsylvanicus*	field mouse
Microtus	*pinetorum*	woodland vole
Mustela	*frenata*	long-tailed weasel
Mustela	*nivalis*	least weasel
Mustela (syn. Neovision)	*vison*	American mink
Myotis	*austroriparius*	southeastern myotis
Myotis	*lucifugus*	little brown myotis
Myotis	*septentrionalis*	northern long-eared myotis
Nycticeius	*humeralis*	evening bat
Odocoileus	*virginianus*	white-tailed deer
Ondatra	*zibethicus*	muskrat
Oryzomys	*palustris*	marsh rice rat
Peromyscus	*leucopus*	white-footed mouse
Pipistrellus	*subflavus*	tri-colored bat, eastern pipistrelle
Procyon	*lotor*	racoon
Reithrodontomys	*humulis*	eastern harvest mouse
Scalopus	*aquaticus*	eastern mole
Sciurus	*carolinensis*	eastern gray squirrrel
Sorex	*hoyi*	American pygmy shrew
Sorex	*longirostris*	southeastern shrew
Sylvilagus	*floidanus*	eastern cottontail
Tamias	*striatus*	eastern chipmunk
Urocyon	*cinereoargenteus*	gray fox
Vulpes	*vulpes*	red fox

Genus	Species	Common Name
Zapus	*hudsonius*	meadow jumping mouse
	Reptiles & Amphibians	
Acris	*crepitans crepitans*	eastern cricket frog
Agkistrodon	*contortrix mokasen*	northern copperhead
Ambystoma	*maculatum*	spotted salamander
Ambystoma	*opacum*	marbled salamander
Anaxyrus	*americanus americanus*	eastern American toad
Anaxyrus	*fowleri*	Fowler's toad
Aspidoscelis	*sexlineata sexlineata*	eastern six-lined racerunner
Carphophis	*amoenus amoenus*	eastern wormsnake
Chelydra	*serpentina serpentina*	eastern snapping turtle
Chrysemys	*picta picta*	eastern painted turtle
Clemmys	*guttata*	spotted turtle
Coluber	*constrictor constrictor*	northern black racer
Desmognathus	*fuscus*	northern dusky salamander
Diadophis	*punctatus edwarsii*	northern ring-necked snake
Eurycea	*cirrigera*	southern two-lined salamander
Eurycea	*guttolineata*	three-lined salamander
Farancia	*erytrogramma erytrogramma*	common rainbow snake
Gastrophryne	*carolinensis*	eastern narrow-mouthed toad
Hemidactylium	*scutatum*	four-toed salamander
Heterodon	*platirhinos*	eastern hog-nosed snake
Hyla	*chrysoscelis*	Cope's gray treefrog
Hyla	*cinerea*	green treefrog
Kinosternon	*subrubrum subrubrum*	eastern mud turtle
Lampropeltis	*calligaster rhombomaculata*	mole kingsnake
Lampropeltis	*getula*	eastern kingsnake
Lithobates	*catesbeianus*	American bullfrog
Lithobates	*palustris*	pickeral frog
Lithobates	*sphenocephalus*	southern leopard frog
Lithobates	*sylvaticus*	wood frog
Lithobates	*virgatipes*	carpenter frog
Lithobates	*clamitans melanota*	northern greenfFrog
Nerodia	*sipedon sipedon*	northern watersnake
Notophthalmus	*viridescens viridescens*	red-spotted newt
Opheodrys	*aestivus*	northern rough greensnake
Pantherophis	*alleghaniensis*	eastern ratsnake
Pantherophis	*guttatus*	red cornsnake
Plestiodon	*fasciatus*	common five-lined skink
Plestiodon	*laticeps*	broad-headed skink
Plethodon	*cinereus*	eastern red-backed salamander
Plethodon	*cylindraceus*	white-spotted slimy salamander
Pseudacris	*feriarum*	upland chorus frog

Genus	Species	Common Name
Pseudacris	*crucifer crucifer*	northern spring peeper
Pseudemys	*concinna concinna*	river cooter
Pseudemys	*rubriventris*	northern red-bellied cooter
Pseudotriton	*montanus montanus*	eastern mud salamander
Pseudotriton	*ruber ruber*	northern red salamander
Regina	*septemvittata*	queensnake
Scaphiopus	*holbrookii*	eastern spadefoot
Sceloporus	*undulatus hyacinthinus*	northern fence lizard
Scincella	*lateralis*	little brown skink
Siren	*lacertina*	greater siren
Siren	*intermedia intermedia*	eastern lesser siren
Sternotherus	*odoratus*	eastern musk turtle
Storeria	*dekayi dekayi*	northern brownsnake
Storeria	*occipitomaculata occipitomaculata*	northern red-bellied snake
Terrapene	*carolina carolina*	eastern box turtle
Thamnophis	*sirtalis sirtalis*	eastern gartersnake
Virginia	*valeriae valeriae*	eastern smooth earthsnake
	Birds	
Accipiter	*Cooperii*	Cooper's hawk
Agelaius	*phoeniceus*	red-winged blackbird
Aimophila	*aestivalis*	Bachman's sparrow
Aix	*sponsa*	wood duck
Anas	*acuta*	common pintail
Anas	*carolinensis*	green winged teal
Anas	*collaris*	ring necked duck
Anas	*discors*	blue winged teal
Anas	*marila*	greater scaup
Anas	*platyrhynchos*	mallard
Anas	*rubripes*	black duck
Archilochus	*colubris*	ruby-throated hummingbird
Ardea	*herodias herodias*	great blue heron
Aytha	*affinis*	lessor scaup
Baeolophus	*bicolor*	tufted titmouse
Branta	*canadensis*	canada goose
Bucephala	*albeola*	bufflehead
Bucephala	*clangula*	common goldeneye
Buteo lineatus	*lineatus*	red shouldered hawk
Caprimulgus	*vociferus*	whip-poor-will
Cardinalis	*cardinalis*	northern cardinal
Carduelis	*tristis*	American goldfinch
Cathartes	*aura*	turkey vulture
Catharus	*guttatus*	hermit thrush
Certhia	*americana*	brown creeper

Genus	Species	Common Name
Charadrius	*vociferus*	killdeer
Chen	*caerulescens*	snow goose
Coccyzus	*americanus*	yellow-billed cuckoo
Colaptes	*auratus*	northern flicker
Colinus	*virginianus*	bobwhite quail
Columba	*livia*	rock pigeon
Contopus	*virens*	eastern wood-peewee
Corvus	*brachyrhynchos*	American crow
Corvus	*ossifragus*	fish crow
Cyanocitta	*cristata*	blue jay
Dendroica	*caerulescens*	black-throated blue warbler
Dendroica	*cerulea*	cerulean warbler
Dendroica	*coronata cornata*	yellow-rumped warbler
Dendroica	*discolor*	prairie warbler
Dendroica	*petechia*	yellow warbler
Dendroica	*pinus*	pine warbler
Dendroica	*striata*	blackpoll warbler
Dryocopus	*pileatus*	pileated woodpecker
Empidonax	*minimus*	least flycatcher
Empidonax	*virescens*	acadian flycatcher
Falco	*sparverius sparverius*	American kestrel
Geothlypis	*trichas*	common yellowthroat
Haliaeetus	*leucocephalus*	bald eagle
Helmitheros	*vermivorus*	worm-eating warbler
Hylocichla	*mustelina*	wood thrush
Icteria	*virens virens*	yellow-breasted chat
Icterus	*galbula*	Baltimore oriole
Junco	*hyemalis*	dark-eyed junco
Larus	*argentatus*	herring gull
Limnothylpis	*swainsonii*	Swainson's warbler
Lophodytes	*cullatus*	hooded merganser
Melanerpes	*carolinus*	red-bellied woodpecker
Melanerpes	*erythrocephalus*	red-headed woodpecker
Meleagris	*gallapavo*	wild turkey
Mniotilta	*varia*	black and white warbler
Molothrus	*ater*	brown-headed cowbird
Myiarchus	*crinitus*	great crested flycatcher
Oporornis	*formosus*	Kentucky warbler
Oxyura	*jamaicensis*	ruddy duck
Pandion	*haliaetus carolinensis*	osprey
Parula	*americana*	northern parula
Passerina	*cyanea*	indigo bunting
Philohela	*minor*	American woodcock

Genus	Species	Common Name
Picoides	*villosus*	hairy woodpecker
Piranga	*olivacea*	scarlet tanager
Piranga	*rubra*	summer tanager
Poecile	*carolinensis*	Carolina chickadee
Polioptila	*caerulea*	blue-gray gnatcatcher
Progne	*subis*	purple martin
Protonotaria	*citrea*	prothonotary warbler
Quiscalus	*quiscula*	common grackle
Regulus	*satrapa*	golden-crowned kinglet
Sayornis	*phoebe*	eastern phoebe
Seiurus	*aurocapilla*	ovenbird
Seiurus	*motacilla*	Louisiana waterthrush
Setophaga	*ruticilla*	American redstart
Sialia	*sialis*	eastern bluebird
Sitta	*carolinensis*	white-breasted nuthatch
Sitta	*pusilla*	brown-headed nuthatch
Spizella	*passerina*	chipping sparrow
Spizella	*pusilla*	field sparrow
Strix	*varia*	barred owl
Sturnella	*magna*	eastern meadowlark
Sturnus s	*vulgari*	European starling
Thryothorus	*ludovicianus*	Carolina wren
Turdus	*migratorius*	American robin
Tyrannus	*tyrannus*	eastern kingbird
Vireo	*flavifrons*	yellow-throated vireo
Vireo	*griseus*	white-eyed vireo
Vireo	*olivaceus*	red-eyed vireo
Wilsonia	*citrina*	hooded warbler
Zevaiduara	*macroura*	mourning dove
Invertebrates		
Aranaea (Spiders)		
Acanthepeira	*stellata*	starbellied orbweaver
Araneus	*sp.*	orb-weaving spider
Ceratinopsidis	*formosa*	dwarf weaver
Cheiracanthium	*sp.*	longlegged sac spiders
Frontinella	*communis*	bowl and doily spider
Hogna	*helluo*	wolf spider
Leucauge	*venusta*	orchard orbweaver
Micrathena	*gracilis*	spined micrathena
Micrathena	*mitrata*	white micrathena
Micrathena	*sagittata*	arrow-shaped micrathena
Misumena	*sp.*	flower crab spiders
Oxyopes	*sp.*	lynx spiders

Genus	Species	Common Name
Paraphidippus	*aurantius*	golden jumping spider
Pardosa	*sp.*	wolf spider
Pardosa	*sp.*	wolf spider
Philodromus	*marxi*	running crab spider
Pisaurina	*mira*	nursery web spider
Pisaurina	*sp.*	nursery web spider
Schizocosa	*sp.*	wolf spider
Tetragnatha	*sp.*	longjawed orbweavers
Thiodina	*sp.*	jumping spider
Xystica	*fraternus*	ground crab spider
Blattodea (cockroaches)		
Cryptocercus	*sp.*	wood roach
Ischnoptera	*deropeltiformis*	dark wood cockroach
Parcoblatta	*pennsylvanica*	Pennsylvania wood roach
Coleoptera (beetles)		
Acmaeodera	*tubulus*	metallic wood-boring beetle
Alaus oculatus	*oculatus*	big-eyed click beetle
Alobates	*pennsylvanica*	false mealworm beetle
Apteromechus	*sp.*	weevil
Ataenius	*sp.*	dung beetle
Athous	*neacanthus*	click beetle
Bassareus	*lituratus*	leaf beetle
Bembidion	*spp.*	minute ground beetle
Blapstinus	*sp.*	darkling beetle
Calathus	*spp.*	ground beetle
Callida	*viridipennis*	bround beetle
Canthon	*chalcites*	scarab beetle
Carabus	*nemoralis*	European ground beetle
Cardiophorus	*erythropus*	click beetle
Catogenus	*rufus*	flat bark beetle
Centronopus	*calcaratus*	darkling beetle
Ceratoma	*trifurcata*	bean leaf beetle
Chauliognathus	*marginatus*	margined leatherwing
Chauliognathus	*pennsylvanicus*	soldier beetle
Coccinella	*septempunctata*	seven-spot ladybird
Colaspis	*brunnea*	leaf beetle
Cotinis	*nitida*	green June beetle
Cregya	*oculata*	checkered beetle
Crytporhopalum	*sp.*	beetle
Curculio	*caryae*	pecan weevil
Cycloneda	*munda*	polished lady beetle
Cyclotrachelus	*sp.*	woodland ground beetle
Cyphon	*sp.*	marsh beetle

Genus	Species	Common Name
Cyrtepistomus	*castaneus*	Asiatic oak weevil
Diabrotica	*undecimpunctata*	cucumber beetle
Diaperis	*biguttata*	darkling beetle
Disonycha	*glabrata*	pigweed flea beetle
Distigmoptera	*sp.*	leaf beetle
Ditemnus	*bidentata*	soldier beetle
Dynastes	*tityus*	eastern Hercules beetle
Eropterus	*sp.*	net-winged beetle
Euphoria	*sepulchralis*	dark flower scarab
Eustophinus	*spp.*	false darkling beetle
Euxenus	*spp.*	fungus weevil
Evarthrus	*sp.*	unnamed beetle 1
Galeritula	*bicolor*	false bombardier beetle
Geotrupes	*hornii*	Horn's earth boring beetle
Geotrupes	*splendidus*	splendid earth boring beetle
Gratiana	*pallidula*	eggplant tortoise beetle
Haplorhynchites	*aeneus*	head-clipping weevil
Harmonia	*axyridis*	Asian lady beetle
Hippodamia	*convergens*	lady beetle
Horistonotus	*curiatus*	unnamed beetle 2
Isomira	*sericea*	unnamed beetle 3
Limonius	*basalaris*	unnamed beetle 4
Limonius	*quercinus*	unnamed beetle 5
Longitarsus	*sp.*	unnamed beetle 6
Longitarsus	*cotulus*	unnamed beetle 7
Lordithon	*sp.*	unnamed beetle 8
Macrodactylus	*subspinosus*	unnamed beetle 9
Malthinus	*occipitalis*	unnamed beetle 10
Mantura	*floridana*	unnamed beetle 11
Megacyllene	*robinae*	locust borer
Melanocanthon	*bispinatus*	unnamed beetle 12
Melanocanthon sp.	*sp.*	unnamed beetle 13
Meracantha	*contracta*	unnamed beetle 14
Mordella	*melaena*	unnamed beetle 15
Mordella	*sp.*	unnamed beetle 16
Naupactus	*sp.*	unnamed beetle 17
Notiophilus	*aeneus*	unnamed beetle 18
Oberea	*gracilis*	unnamed beetle 19
Odonteus	*sp.*	unnamed beetle 20
Odontotaenius	*disjunctus*	unnamed beetle 21
Ophraella	*notula*	unnamed beetle 22
Orphilus	*ater*	unnamed beetle 23
Pachybrachis	*luridus*	leaf beetle

Genus	Species	Common Name
Pachybrachis	*nigricornis carbonarius*	leaf beetle
Palaminus	*sp.*	rove beetle
Pallodes	*sp.*	mushroom nit
Paria	*fragariae*	strawberry rootworm
Penthe	*obliquata*	tetratomid beetle
Phyllophaga	*sp.*	scarab beetle
Platydracus	*maculosus*	rove beetle
Platynus	*spp.*	ground beetle
Popillia	*japonica*	japanese beetle
Pterostichus	*sp.*	ground beetle
Pyropyga	*sp.*	firefly
Rhabdopterus	*picipes*	leaf beetle
Rhagonycha	*sp.*	soldier beetle
Scaphidium	*quadriguttata*	shining fungus beetle
Silvanoprus	*angusticollis*	silvanid flat bark beetle
Sitonia	*cylindricollis*	sweet clover beetle
Stelidota	*octomaculata*	sap beetle
Stenispa	*metallica*	leaf beetle
Stilbus	*sp.*	shining flower beetle
Tachinus	*fimbriatus*	rove beetle
Tenomerga	*cinerea*	reticulated beetle
Trichapion	*sp.*	weevil
Tricholochmaea	*sp.*	leaf beetle
Tritoma	*biguttata*	pleasing fungus beetle
Uleiota	*dubius*	flat bark beetle
Uloma	*imberbis*	darkling beetle
Uloma	*punctulata*	darkling beetle
Collembola (springtails)		
Podura	*sp.*	springtail
Diptera (Flies)		
Asilidae	*sp.*	robber fly
Chlorops	*sp.*	gout fly
Chrysops	*sp.*	deer fly
Condylostylus	*sp.*	long legged fly
Conquillettidia	*perturbans*	irritating mosquito
Dialysis	*sp.*	awl fly
Eugnophomyia	*sp.*	crane fly
Machimus	*sp.*	robber fly
Neoitamus	*flavofemoralis*	robber fly
Phaonia	*sp.*	stable fly
Rivellia	*sp.*	signal fly
Sapromyza sp.	*sp.*	acalyptrate fly
Tachinidae	*sp.*	tachinid fly

Genus	Species	Common Name
Tipula	*longiventris*	crane fly
Toxomerus	*geminatus*	syrphid fly
Toxomerus	*sp.*	hoverfly
Trichocera	*sp.*	winter crane fly
Hemiptera Part 1 (True bugs)		
Acholla	*multispinosa*	assasin bug
Allocoris	*pulicaria*	negro bug
Alydidae	*sp.*	broad-headed bug
Alydus	*eurinus*	all black bug
Alydus	*pilosulus*	broad-headed bug
Ceresa	*lutea*	buffalo treehopper
Cixius	*sp.*	cixiid planthopper
Dagbertus	*sp.*	jumping tree bug
Euschistus	*sp.*	shield bug
Euschistus	*servus*	brown stink bug
Gardena	*poppaea*	assasin bug
Harmostes	*reflexulus*	brown scentless plant bug
Jalysus	*spinosus*	stilt bug
Lygus	*lineolaris*	tarnished plant bug
Lygus	*lineolaris*	tarnished plant bug
Merocoris	*distinctus*	leaf-footed bug
Mormidea	*lugens*	elegant little bug
Nezara	*viridula*	southern green stink bug
Oebalus	*pugnax*	rice stink bug
Oedancala	*dorsalis*	pachygronthid seed bug
Ozophora	*picturata*	rhyparochromid seed bug
Paraphlepsius	*fulvidorsum*	leafhopper
Paraphlepsius	*irroratus*	brown speckled leafhopper
Philaenus	*spumarius*	meadow froghopper
Phlegyas	*abbreviatus*	chinch bug
Pselliopus	*cinctus*	assasin bug
Reduviidae	*sp.*	assasin bug
Sinea	*sp.*	assasin bug
Tetraneura	*sp.*	aphid
Thyanta	*custator*	red-shouldered stink bug
Hemiptera Part 2 (Hoppers)		
Acanalonia	*bivittata*	planthopper
Liburniella	*ornata*	planthopper
Paraulacizes	*irrorata*	speckled sharpshooter
Rhynchomitra	*microrhina*	planthopper
Scolops	*sp.*	planthopper
Hymenoptera (Wasps, Ants, and Bees)		
Acanthomyops	*spp.*	ants

Genus	Species	Common Name
Andrena	*sp.*	mining bee
Aphaenogaster	*sp.*	myrmicine ants
Apis	*mellifera*	western honey bee
Bombus	*impatiens*	eastern common bumblebee
Camponotus	*americanus*	carpenter ant
Camponotus	*castaneus*	reddish carpenter ant
Camponotus	*chromaiodes*	red carpenter ant
Camponotus	*novaeboracensis*	New York carpenter ant
Camponotus	*pennsylvanicus*	black carpenter ant
Chrysis	*spp.*	cuckoo wasp
Crematogaster	*lineolata*	ant
Dasymutilla	*occidentalis*	red velvet ant
Dasymutilla	*quadriguttata*	velvet ant
Dolichovespula	*maculata*	bald-faced hornet
Eumenes	*spp.*	potter wasp
Formica	*sp.*	wood ant
Lasius	*sp.*	formaicine ant
Monobia	*quadridens*	four-toothed mason wasp
Monomorium	*sp.*	ant
Myrmosa	*sp.*	ant
Polistes	*fuscatus*	paper wasp
Sceliphron	*spp.*	mud dauber
Tachytes	*sp.*	sand-loving wasp
Trypoxylon	*politum*	pipe wrgan mud-dauber
Vespa	*crabo*	European hornet
Xylocopa	*spp.*	carpenter bee
Isoptera (Termites)		
Reticulotermes	*flavipes*	eastern subterranean termite
Ixodida (Ticks and Mites)		
Amblyomma	*americanum*	lone star tick
Dermacentor	*variabilis*	American dog tick
Ixodes	*scapularis*	deer tick
Lepidoptera Part 1: Moths		
Anisota	*senatoria*	orange-stripe oakworm
Bittacus	*spp.*	hangingfly
Ceuthophilus	*spp.*	camel cricket
Conocephalus	*fasciatus*	meadow grasshopper
Dissosteira	*carolina carolina*	band-winged grasshopper
Gryllus	*pennsylvanicus*	field cricket
Hypopygia	*costalis*	clover hayworm moth
Microcentrum	*spp.*	bush katydid
Nomophila	*nearctica*	lucerne moth
Scudderia	*spp.*	bush katydid

Genus	Species	Common Name
Spoladea	*recurvalis*	Hawaiin beet webworm
Lepidoptera Part 2: Butterflies and Skippers		
Achalarus	*lyciades*	hoary hdge
Amblyscirtes	*vialis*	common roadside skipper
Ancyloxypha	*numitor*	least skipper
Asterocampa	*celtis*	hackberry butterfly
Atalopedes	*campestris*	sachem
Cercyonis	*pegala*	common wood nymph
Chlosyne	*nycteis*	silvery checkersoot
Danaus	*plexippus*	monarch
Epargyreus	*clarus*	silver-spotted skipper
Erynnis	*baptisiae*	wild indigo duskywing
Erynnis	*icelus*	dreamy duskywing
Erynnis	*juvenalis*	Juvenal's duskywing
Erynnis	*brizo*	sleepy duskywing
Erynnis	*horatius*	Horace's duskywing
Euptoieta	*claudia*	variegated fritillary
Hermeuptychia	*sosybius*	Carolina satyr
Hylephila	*phyleus*	fiery skipper
Junonia	*coenia*	common buckeye
Lerema	*accius*	clouded skipper
Libytheana	*carinenta*	American snout
Limenitis	*archippus*	viceroy
Limenitis	*arthemis astyanax*	red-spotted purple
Megisto	*cymela*	little wood satyr
Nymphalis	*antiopa*	mourning cloak
Pholisora	*catullus*	common sootywing
Phyciodes	*tharos*	pearl crescent
Poanes	*hobomok*	hobomok skipper
Polites	*origenes*	crossline skipper
Polygonia	*comma*	eastern comma
Polygonia	*interrogationis*	question mark
Pompeius	*verna*	little glassywing
Pyrgus	*communis*	common checkered skipper
Satyrodes	*appalachia*	Appalachian brown
Speyeria	*cybele*	great spangled fritillary
Staphylus	*hayhurstii*	Hayhurst's scallopwing
Thorybes	*pylades*	northern cloudywing
Thorybes	*bathyllus*	southern cloudywing
Thorybes	*confusis*	confused cloudywin
Vanessa	*cardui*	painted lady
Vanessa	*virginiensis*	American lady
Vanessa	*atalanta*	red admiral

Genus	Species	Common Name
Wallengrenia	*egeremet*	northern broken dash
Mandtodea (Mantids)		
Stagmomantis	*carolina*	Carolina mantis
Tenodera	*sp.*	mantis
Mecoptera (Scorpionflies)		
Bittacus	*sp.*	hangingfly
Neuroptera (Lacewings, Mantidflies, and Antlions)		
Chrysopidae (family)	*sp.*	green lacewing
Odonata (dragonflies and damselflies)		
Aeshna	*umbrosa*	shadow darner
Anax	*junius*	green darner
Anax	*longipes*	comet darner
Argia	*bipunctulata*	seepage dancer
Argia	*fumipennis violacea*	violet dancer
Argia	*moesta*	powdered dancer
Argia	*tibialis*	blue-tipped dancer
Arigomphus	*villosipes*	unicorn clubtail
Basiaeschna	*janata*	springtime darner
Boyeria	*vinosa*	fawn darner
Calopteryx	*dimidiata*	saprkling jewelwing damselfly
Calopteryx	*maculata*	ebony jewelwing
Celithemis	*elisa*	calico pennant
Celithemis	*eponina*	Halloween pennant
Celithemis	*fasciata*	banded pennant
Celithemis	*martha*	Martha's pennant
Celithemis	*verna*	double-ringed pennant
Chromagrion	*conditum*	aurora dancer
Cordulegaster	*bilineata*	brown spiketail
Cordulegaster	*erronea*	tiger spiketail
Cordulegaster	*maculata*	twin-spotted spiketail
Cordulegaster	*obliqua*	arrowhead spiketail
Didymops	*transversa*	stream cruiser
Enallagma	*aspersum*	azure bluet
Enallagma	*civile*	familiar bluet
Enallagma	*daeckii*	attenuated bluet
Enallagma	*divagans*	turquoise bluet
Enallagma	*dubium*	burgundy bluet
Enallagma	*exsulans*	stream bluet
Enallagma	*geminatum*	skimming bluet
Enallagma	*signatum*	orange bluet
Enallagma	*traviatum*	slender bluet
Enallagma	*vesperum*	vesper bluet
Epiaeschna	*heros*	swamp darner

Genus	Species	Common Name
Epitheca	*cynosura*	common baskettail
Epitheca	*spinosa*	robust baskettail
Erythemis	*simplicicollis*	eastern pondhawk
Erythrodiplax	*minuscula*	little blue dragonlet
Gomphaeschna	*furcillata*	harlequin darner
Gomphus	*exilis*	lancet clubtail
Gomphus	*lividus*	ashy clubtail
Hagenius	*brevistylus*	dragonhunter
Helocordulia	*selysii*	Selys' sundragon
Ischnura	*hastata*	citrine forktail
Ischnura	*kellicotti*	lilypad forktail
Ischnura	*posita*	fragile forktail
Ischnura	*ramburii*	Rambur's forktail
Lestes	*congener*	spotted spreadwing
Lestes	*disjunctus australis*	southern spreadwing
Lestes	*inaequalis*	elegant spreadwing
Lestes	*rectangularis*	slender spreadwing
Lestes	*vigilax*	swamp spreadwing
Libellula	*auripennis*	golden-winged skimmer
Libellula	*axilena*	bar-winged skimmer
Libellula	*cyanea*	spangled skimmer
Libellula	*deplanata*	blue corporal
Libellula	*flavida*	yellow-sided skimmer
Libellula	*incesta*	slaty skimmer
Libellula	*luctuosa*	widow skimmer
Libellula	*lydia*	common whitetail
Libellula	*pulchella*	twelve-spotted skimmer
Libellula	*semifasciata*	painted skimmer
Libellula	*vibrans*	great blue skimmer
Macromia	*illinoiensis*	swift river cruiser
Nannothemis	*bella*	elfin skimmer
Nasiaeschna	*pentacantha*	cyrano darner
Nehalennia	*integricollis*	southern sprite
Pachydiplax	*longipennis*	blue dasher
Pantala	*flavescens*	globe skimmer
Perithemis	*tenera*	eastern amberwing
Progomphus	*obscurus*	common sanddragon
Somatochlora	*linearis*	mocha emerald
Somatochlora	*provocans*	treetop emerald
Somatochlora	*tenebrosa*	clamp-tipped emerald
Stylurus	*sp.*	hanging clubtail
Sympetrum	*ambiguum*	blue-faced meadowhawk
Sympetrum	*vicinum*	autumn meadohawk

Genus	Species	Common Name
Tachopteryx	*thoreyi*	gray petaltail
Telebasis	*byersi*	duckweed firetail
Tramea	*carolina*	Carolina saddlebags
Opiliones (Harvestmen)		
Phalangiidae (family)	*sp.*	unidentified harvesman 1
Phalangiidae (family)	*sp.*	unidentified harvesman 2
Phalangiidae (family)	*sp.*	unidentified harvesman 3
Phalangiidae (family)	*sp.*	unidentified harvesman 4
Orthoptera (Grasshoppers, Katydids, Crickets)		
Acrididae (family)	*sp.*	short-horned grasshopper 1
Acrididae (family)	*sp.*	short-horned grasshopper 2
Acrididae (family)	*sp.*	short-horned grasshopper 3
Acrididae (family)	*sp.*	short-horned grasshopper 4
Allonemobius	*fasciatus*	striped ground cricket
Allonemobius	*sp.*	robust ground cricket
Arphia	*sp.*	grasshopper
Camptonotus	*carolinensis*	Carolina leaf-roller
Ceuthophilus	*spp.*	camel cricket
Chortophaga	*viridifasciata*	green-striped grasshopper
Conocephalus	*sp.*	conehead bush cricket
Conocephalus	*strictus*	straight-lanced meadow katydid
Conocephalus	*fasciatus*	meadow grasshopper
Dissosteira	*carolina*	band-winged grasshopper
Eunemobius	*confusus*	confused ground cricket
Gryllidae (family)	*sp.*	cricket
Gryllus	*sp.*	field cricket 1
Gryllus	*sp.*	field cricket 2
Gryllus	*veletis*	spring field cricket
Gryllus	*pennsylvanicus*	field cricket
Leptysma	*marginicollis*	spur-throated grasshopper
Melanoplus	*differentialis*	spur-throated grasshopper
Melanoplus	*ferrurrubrum*	spur-throated grasshopper
Melanoplus	*sp.*	spur-throated grasshopper
Mermiria	*intertexta*	eastern mermiria
Metaleptea	*brevicornis*	clip-wing grasshopper
Microcentrum	*spp.*	bush katydid
Miogryllus	*saussurei*	eastern striped cricket
Neoconocephauls	*sp.*	common conehead
Oecanthus	*fultoni*	snowy tree cricket
Oecanthus	*spp.*	tree cricket
Orchelimum	*sp.*	greater meadow katydid 1
Orchelimum	*sp.*	greater meadow katydid 2
Orphulella	*sp.*	grasshopper

Genus	Species	Common Name
Phyllopalpus	*pulchellus*	red-headed bush cricket
Rhaphidophoridae (family)	*sp.*	spider cricket
Scudderia	*spp.*	bush katydid
Tettigoniidae (family)	*sp.*	katydid
Velarifictorus	*micado*	Japanese burrowing cricket
Phasmatodea (Stick Insects)		
Heteronemiidae (family)	*sp.*	common walking stick
Polydesmida (Flat-backed Millipedes)		
Sigmoria	*sp.*	millipede
Psocodea (Barklice)		
Blastopsocus	*sp.*	common barklouse
Spirobolida (Round-backed Millipedes)		
Narceus	*sp.*	millipede
Fish		
Acantharchus	*pomotis*	mud sunfish
Alosa	*aestivalis*	blueback herring
Alosa	*pseudoharengus*	alewife
Ameiurus	*natalis*	yellow bullhead
Ameiurus	*nebulosus*	brown bullhead
Amia	*calva*	bowfin
Anguilla	*rostrata*	American eel
Aphredoderus	*sayanus*	pirate perch
Centrarchus	*macropterus*	flier
Clinostomus	*funduloides*	rosyside dace
Ctenopharyngodon	*idella*	grass carp
Cyprinella	*analostana*	satinfin shiner
Dorosoma	*cepedianum*	gizzard shad
Enneacanthus	*gloriosus*	bluespotted sunfish
Enneacanthus	*obesus*	banded sunfish
Erimyzon	*oblongus*	creek chubsucker
Esox	*americanus*	redfin pickerel
Esox	*niger*	chain pickerel
Etheostoma	*olmstedi*	tessellated darter
Fundulus	*diaphanus*	banded killifish
Gambusia	*holbrooki*	mosquito fish
Hybognaths	*regius*	eastern silvery minnow
Icalurus	*punctatus*	channel catfish
Ictalurus	*furcatus*	blue catfish
Lampetra	*appendix*	American brook lamprey
Lepomis	*auritus*	redbreast sunfish
Lepomis	*cyanellus*	green sunfish
Lepomis	*gibbosus*	pumpkinseed sunfish
Lepomis	*gulosus*	warmouth

Genus	Species	Common Name
Lepomis	*macrochirus*	bluegill
Lepomis	*microlophus*	redear sunfish
Micropterus	*salmoides*	largemouth bass
Morone	*ameriana*	white perch
Notemigonus	*crysoleucas*	golden shiner
Noturus	*gyrinus*	tadpole madtom
Noturus	*insignis*	margined madtom
Oncorhynchus	*mykiss*	rainbow trout
Perca	*flavescens*	yellow perch
Pomoxis	*nigromaculatus*	black crappie
Rhinichthys	*atratulus*	blacknose dace
Semotilus	*atromaculatus*	creek chub
Semotilus	*corporalis*	fallfish
Umbra	*pygmaea*	eastern mudminnow

U.S. Army Garrison Fort A.P. Hill
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Environmental and Natural Resources Division
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This list is edited and published by the Fish & Wildlife Branch. Please send any comments, corrections or new observations to this office to aid in future revisions.

July 2012

CHECKLIST OF BIRDS

Fort A.P. Hill, Virginia

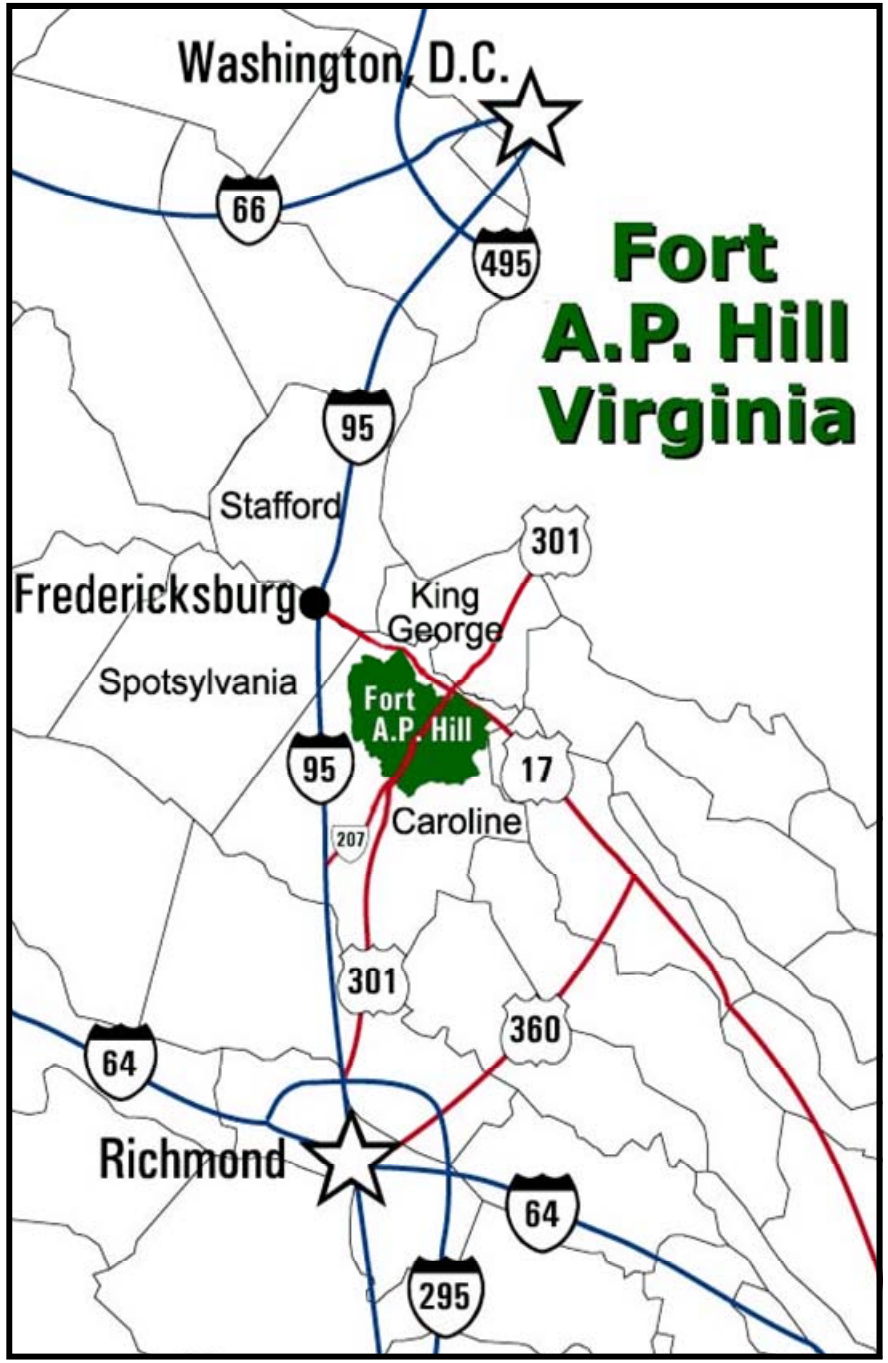
Fish & Wildlife Branch
Environmental Science & Natural Resources Division
Directorate of Public Works
Fort A.P. Hill, Virginia

Fort A.P. Hill

Army Garrison Fort A.P. Hill is an all-purpose Regional Training Center, serving every component of the Armed Forces, active and reserve, and several agencies of the U.S. government, training close to 100,000 personnel annually. With 76,000 acres, Fort A.P. Hill is one of the largest East Coast installations and is the range and training center closest to the National Capitol Region. The training landscapes within Fort A.P. Hill provide unique habitats that benefit many species of native wildlife. Migrating and year-round resident birds use the Garrison as a resting and nesting refuge. The abundant fire maintained habitats offer a rare "relic" ecosystem in the Mid-Atlantic region. The Fish and Wildlife Branch manages these lands to benefit both wildlife and military training. A true symbiotic relationship.

SEASONS	
Sp. - Spring (March-May)	Su. - Summer (June- August)
F- Fall (September-November)	W - Winter (December-February)

RELATIVE ABUNDANCE
A - Abundant: numerous individuals, easily seen or heard in suitable habitat
C - Common: likely to be seen or heard in suitable habitat
U - Uncommon: possible to see or hear in suitable habitat
O - Occasional: seasonally possible to see or hear in low numbers in suitable habitat
R - Rare: unlikely to be seen or heard



NOTES

VISITS 1	2	3	SPECIES	SEASONS Sp.	Su.	F	W
LOONS & GREBES							
			Common Loon *(Gavia immer)*			R	R
			Pied-billed Grebe *(Podilymbus podiceps)*	O			O
CORMORANT							
			Double-crested Commorant *(Phalacrocorax auritus)*		R	R	
BITTERNS & EGRETS							
			Great Egret *(Ardea alba)*		O	O	
HERONS							
			Great Blue Heron *(Ardea herodias)*	C	C	C	C
			Green Heron *(Butorides virescens)*	R	U	U	R
GEESE							
			Canada Goose *(Branta canadensis)*	A	A	C	C
DUCKS & COOTS							
			Wood Duck *(Aix sponsa)*	C	C	C	U
			Mallard *(Anas Platyrhynchos)*	C	U	U	U
			Ring-necked Duck *(Aythya collaris)*	C			C
			American Black Duck *(Anas rubripes)*	U	U	U	U
			Bufflehead *(Bucephala albeola)*	U		O	U
			Hooded Merganser *(Lophodytes cucullatus)*	C		O	C
			Northern Pintail *(Anas acuta)*	O			O
			American Wigeon *(Anas Americana)*	O			O
			Green-winged Teal *(Anas crecca)*	O		O	
			American Coot *(Fulica Americana)*	O	R	R	O
PLOVER & SANDPIPERS							
			Killdeer *(Charadrius vociferus)*	C	C		
			Spotted Sandpiper *(Actitis macularius)*	O		O	
			Solitary Sandpiper *(Tringa solitaria)*	O		O	
			American Woodcock *(Scolopax minor)*	U		U	
TURKEYS & QUAIL							
			Wild Turkey *(Meleagris gallopavo)*	C	C	C	C
			Northern Bobwhite *(Colinus virginianus)*	C	C	C	C

VISITS 1	2	3	SPECIES	SEASONS Sp.	Su.	F	W
VULTURES							
			Black Vulture *(Coragyps atratus)*	C	C	C	C
			Turkey Vulture *(Cathartes aura)*	C	C	C	C
EAGLES & HAWKS							
			Osprey *(Pandion haliaetus)*	U	U		
			Cooper's Hawk *(Accipiter cooperii)*	U	U	U	U
			Bald Eagle *(Haliaeetus leucocephalus)*	C	C	C	C
			Red-shouldered Hawk *(Buteo lineatus)*	U	U	U	U
			Red-tailed Hawk *(Buteo jamaicensis)*	C	C	C	C
			Northern Harrier *(Circus cyaneus)*	R	R	U	U
			Sharp-shinned Hawk *(Accipiter striatus)*	U			U
			Broad-winged Hawk *(Buteo platypterus)*	U	U		
FALCONS & OWLS							
			American Kestrel *(Falco sparverius)*	C	C	U	U
			Merlin *(Falco columbarius)*	R		O	
			Eastern Screech-owl *(Megascops asio)*	C	C	C	C
			Great Horned Owl *(Bubo virginianus)*	C	C	C	C
			Barred Owl *(Strix varia)*	C	C	C	C
DOVES							
			Mourning Dove *(Zenaida macroura)*	C	C	C	C
			Rock Pigeon *(Columba livia)*	U	U	U	U
CUCKOOS							
			Yellow-billed Cuckoo *(Coccyzus americanus)*	U	U		
GOATSUCKERS							
			Chuck-will's-widow *(Caprimulgus carolinensis)*	U	U		
			Whip-poor-will *(Caprimulgus vociferus)*	C	C		
			Common Nighthawk *(Chordeiles minor)*	U	U		
SWIFTS							
			Chimney Swift *(Chaetura pelagica)*		U	U	
HUMMINGBIRDS							
			Ruby-throated Hummingbird *(Archilochus colubris)*		C	C	

VISITS	DATE	TIME	WEATHER CONDITIONS
1			
2			
3			

NOTES

VISITS 1	2	3	SPECIES	SEASONS Sp.	Su.	F	W
			CARDINALS & GROSBEAKS				
			Northern Cardinal *(Cardinalis cardinalis)*	C	C	C	C
			Blue Grosbeak *(Passerina caerulea)*	U	C	U	
			Indigo Bunting *(Passerina cyanea)*	U	C	C	
			Rose-breasted Grosbeak *(Pheucticus ludovicianus)*		O	O	
			Evening Grosbeak *(Coccothraustes vespertinus)*	R			R
			SPARROWS				
			Eastern Towhee *(Pipilo erythrophthalmus)*	C	C	C	
			Chipping Sparrow *(Spizella passerina)*	A	A	A	
			Field Sparrow *(Spizella pusilla)*	C	C	C	C
			Grasshopper Sparrow *(Ammodramus savannarum)*	C	C		
			White-throated Sparrow *(Zonotrichia albicollis)*	C		U	C
			Song Sparrow *(Melospiza melodia)*	C	C	C	C
			Savannah Sparrow *(Passerculus sandwichensis)*	U		U	U
			House Sparrow *(Passer domesticus)*	C	C	C	C
			Vesper Sparrow *(Pooecetes gramineus)*	R		R	
			Fox Sparrow (Passerella iliaca)			R	R
			White-crowned Sparrow *(Zonotrichia leucophrys)*	R			R
			Dark-eyed Junco *(Junco hyemalis)*	C			C
			Swamp Sparrow *(Melospiza georgiana)*	C		C	U
			American Tree Sparrow *(Spizella arborea)*	U			U
			Bachman's Sparrow *(Peucaea aestivalis)*	R	R		
			BLACKBIRDS & ORIOLES				
			Red-winged Blackbird *(Agelaius phoeniceus)*	C	C	U	
			Common Grackle *(Quiscalus quiscula)*	A	A	A	A
			Brown-headed Cowbird *(Molothrus ater)*	C	C	C	C
			Orchard Oriole *(Icterus spurius)*	U	U		
			Baltimore Oriole *(Icterus galbula)*	U	U		
			Rusty Blackbird *(Euphagus carolinus)*	U			U
			Eastern Meadowlark *(Sturnella magna)*	U	U	U	U
			STARLINGS				
			European Starling *(Sturnus vulgaris)*	C	C	C	C

VISITS 1	2	3	SPECIES	SEASONS Sp.	Su.	F	W
			KINGFISHERS				
			Belted Kingfisher *(Megaceryle alcyon)*	C	C	C	C
			WOODPECKERS				
			Red-headed Woodpecker *(Melanerpes erythrocephalus)*	C	C	C	C
			Red-bellied Woodpecker *(Melanerpes carolinus)*	C	C	C	C
			Downy Woodpecker *(Picoides pubescens)*	C	C	C	C
			Hairy Woodpecker *(Picoides villosus)*	U	U	U	U
			Pileated Woodpecker *(Dryocopus pileatus)*	C	C	C	C
			Yellow-bellied Sapsucker (Sphyrapicus varius)			C	C
			Northern Flicker *(Colaptes auratus)*	C	U	U	C
			FLYCATCHERS				
			Acadian Flycatcher *(Empidonax virescens)*	C	C	U	
			Great-crested Flycatcher *(Myiarchus crinitus)*	U	U		
			Eastern Kingbird *(Tyrannus tyrannus)*	C	C	U	
			Eastern Wood-pewee *(Contopus virens)*	C	C	C	
			Eastern Phoebe *(Sayornis phoebe)*	C	C	C	O
			LARKS				
			Horned Lark *(Eremophila alpestris)*	O	O	O	O
			SWALLOWS				
			Tree Swallow *(Tachycineta bicolor)*	C	C	C	
			Barn Swallow *(Hirundo rustica)*	U	C	U	
			Purple Martin *(Progne subis)*		U	U	
			N. Rough-winged Swallow *(Stelgidopteryx serripennis)*	U	U		
			JAYS & CROWS				
			Blue Jay *(Cyanocitta cristata)*	C	C	C	C
			American Crow *(Corvus brachyrhynchos)*	A	A	A	A
			Fish Crow *(Corvus ossifragus)*	C	C	C	C
			CHICKADEES & TITMICE				
			Carolina Chickadee *(Poecile carolinensis)*	C	C	C	C
			Tufted Titmouse *(Baeolophus bicolor)*	A	A	A	A

VISITS 1	2	3	SPECIES	SEASONS Sp.	Su.	F	W
CREEPERS & WRENS							
			Brown Creeper *(Certhia Americana)*			U	U
			Carolina Wren *(Thryothorus ludovicianus)*	C	C	C	C
			House Wren *(Troglodytes aedon)*	U	C	C	
			Winter Wren *(Troglodytes hiemalis)*	U			U
			Marsh Wren *(Cistothorus palustris)*		U	U	
KINGLETS & GNATCATCHERS							
			Golden-crowned Kinglet *(Regulus satrapa)*	C			C
			Ruby-crowned Kinglet *(Regulus calendula)*	U	O		U
			Blue-Gray Gnatcatcher *(Polioptila caerulea)*	C	C		
THRUSHES							
			Eastern Bluebird *(Sialia sialis)*	C	C	C	C
			Hermit Thrush *(Catharus guttatus)*	U			U
			Wood Thrush *(Hylocichla mustelina)*	C	C		
			American Robin *(Turdus migratorius)*	C	C	C	U
MIMICS & THRASHERS							
			Gray Catbird *(Dumetella carolinensis)*	C	C	U	
			Northern Mockingbird *(Mimus polyglottos)*	C	C	C	C
			Brown Thrasher *(Toxostoma rufum)*	O	U	U	O
WAXWINGS							
			Cedar Waxwing *(Bombycilla cedrorum)*	U	U	C	C
VIREOS							
			White-eyed Vireo *(Vireo griseus)*	C	C		
			Blue-headed Vireo *(Vireo solitarius)*	U	U		
			Yellow-throated Vireo *(Vireo flavifrons)*	C	C		
			White-eyed Vireo *(Vireo griseus)*	C	C		
			Blue-headed Vireo *(Vireo solitarius)*	U	U		
			Yellow-throated Vireo *(Vireo flavifrons)*	C	C		
			Red-eyed Vireo *(Vireo olivaceus)*	A	A	A	
SHRIKES							
			Loggerhead Shrike *(Melospiza georgiana)*	R	R	R	R

VISITS 1	2	3	SPECIES	SEASONS Sp.	Su.	F	W
NUTHATCHES							
			White-breasted Nuthatch *(Sitta carolinensis)*	C	C	C	C
			Brown-headed Nuthatch *(Sitta pusilla)*	U	U	U	U
WARBLERS							
			Northern Parula *(Parula americana)*	A	A		
			Yellow Warbler *(Dendroica coronata)*	U	U		
			Black-throated Blue Warbler *(Setophaga caerulescens)*	U		U	
			Yellow-rumped Warbler *(Dendroica coronata)*	C		U	C
			Palm Warbler *(Dendroica palmarum)*	U		U	
			Pine Warbler *(Dendroica pinus)*	C	A	A	C
			Prarie Warbler *(Dendroica discolor)*	C	C		
			Black & White Warbler *(Mniotilta varia)*	C		C	
			Prothonotary Warbler *(Protonotaria citrea)*	U	U		
			Hooded Warbler *(Wilsonia citrina)*	C	C		
			Ovenbird *(Seiurus aurocapillus)*	A	A		
			Louisanna Waterthrush *(Parkensia motacilla)*	C	C		
			Common Yellowthroat *(Geothlypis trichas)*	C	C	C	R
			Yellow-throated Warbler *(Setophaga dominica)*	R	O		
			Blackpoll Warbler *(Dendroica striata)*	O		O	
			Yellow-breasted Chat *(Icteria virens)*	U	C	U	
			Magnolia Warbler *(Setophaga magnolia)*		R	R	
			Worm-eating Warbler *(Helmitheros vermivorus)*		U	U	
			Kentucky Warbler *(Geothlypis formosa)*	R	U	R	
			American Redstart *(Setophaga ruticilla)*		U	U	
TANAGERS							
			Summer Tanager *(Piranga rubra)*		C	U	
			Scarlet Tanager *(Piranga olivacea)*		C	U	
FINCHES							
			American Goldfinch *(Carduelis tristis)*	C	C	C	C
			House Finch *(Carpodacus mexicanus)*	C	C	C	C
			Purple Finch *(Carpodacus purpureus)*	U			U

APPENDIX D – FORT A.P. HILL
INTEGRATED CULTURAL RESOURCES MANAGEMENT PLAN

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INTEGRATED CULTURAL RESOURCES MANAGEMENT PLAN

United States Army Garrison

Fort A.P. Hill, Virginia

August 2013

PRINTED ON RECYCLED PAPER • PRINTED ON RECYCLED PAPER •

EXECUTIVE SUMMARY

INTRODUCTION

Fort A.P. Hill is responsible for the stewardship of the cultural and historic resources located within the installation boundaries. This Integrated Cultural Resources Management Plan (ICRMP) is designed to provide Fort A.P. Hill staff with procedures and guidance to facilitate integration of cultural resource management responsibilities into its broader military mission. This document was prepared in accordance with Army Regulation 200-1 (AR 200-1) and Department of Defense Instruction (DoDI) 4715.16.

The National Historic Preservation Act (NHPA) of 1966, as amended, is of particular legal importance to Federal cultural resources as it establishes Federal agency stewardship responsibilities for historic properties owned or controlled by the Federal government. Section 106 of the NHPA requires that Federal agencies take into account the effects of their undertakings on any district, site, building, structure, or object in, or eligible for listing in, the National Register of Historic Places (National Register) and provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking. Section 110 of the NHPA requires that Federal agencies inventory, evaluate, and nominate to the National Register significant historic properties, and further requires that these properties be managed in a manner that respects this historic significance. Together these sections require Fort A.P. Hill to know what historic properties it has and how its actions may affect them.

INTENT AND PURPOSE

The ICRMP provides a legislative and historical background to cultural resources at Fort A.P. Hill. Section 2 gives a summary of applicable historic preservation laws and regulations. Section 3 provides an overview of the current National Register status of known historic properties at Fort A.P. Hill, as well as the methods and results of previous cultural resource investigations. Section 4 explains how cultural resources can be identified, evaluated, and protected, and provides a brief list of potential undertakings. Section 5 addresses the need to coordinate and consult on cultural resources issues during the planning stages of an undertaking. Standard operating procedures (SOPs) in Section 6 provide guidance on how to address cultural resource issues during consultation, mission activities (e.g., training), and maintenance actions (e.g., timbering, wildlife management, etc.). Sections 7 and 8 address economic and public participation considerations respectively. The appendices are intended to provide easy access to legal information and Fort A.P. Hill cultural resources data. The text of significant laws, regulations, and agreements are included in appendices A through J. The remaining appendices include historical context information and resource data which is subject to frequent change and may be exempt from the Freedom of Information Act.

OBJECTIVES

An ICRMP facilitates installation compliance with cultural resources management laws and policies by:

- Integrating cultural resources management into the existing operations of Fort A.P. Hill;
- Developing a plan to enhance project coordination, planning, and compliance activities;
- Providing the basis for a Programmatic Agreement with the Virginia Department of Historic Resources (VDHR); and
- Providing installation specific procedures and recommendations for cultural resources management.

AR 200-1 and DoDI 4715.16 REQUIREMENTS

This ICRMP meets the requirements of AR 200-1 and DoDI 4715.16 by:

- Summarizing Fort A.P. Hill's mission and history;
- Providing cultural resources context information pertinent to the installation;
- Identifying all legal requirements pertinent to cultural resources management;
- Providing inventory and evaluation information for all known archaeological and architectural resources on the installation;
- Identifying planned future undertakings that may affect cultural resources;
- Providing processes for the inventory of unsurveyed portions of the installation;
- Identifying current administrative, operations, planning, and maintenance decision-making processes at Fort A.P. Hill;
- Providing strategies for identifying, protecting, and preserving cultural and historic resources and complying with Federal, Department of Defense, and Department of the Army cultural resources laws and regulations; and
- Identifying standard operating procedures of internal installation coordination and external consultation for undertakings that may affect cultural resources.

CONCLUSIONS

The goal of the ICRMP for Fort A.P. Hill is to integrate and coordinate the effective stewardship of cultural resources with the ongoing demands of military training, testing, and infrastructure operations and maintenance. The Fort A.P. Hill ICRMP provides cultural resources management information and procedures for project coordination, planning, and compliance to meet Fort A.P. Hill's requirements for operations and training. Integrating the ICRMP with other installation-wide planning documents such as the Real Property Master Plan, Training Range Development Plan, and Integrated Natural Resources Management Plan will ensure compliance with cultural resources laws and regulations early in project development, reduce the potential for delays, and provide for the greatest possible protection and preservation of cultural and historic resources.

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APPENDICES

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L: Architectural Resources List
M: National Register nomination forms
N: Cultural Resources Surveys List
O: Surveyed Areas Map
P: Recorded Cultural Resources Map
Q: 2003 Predictive Model
R: Historic Context Summary
S: Tract-Specific Research
T: Pre-Army Historic Tract Map
U: Cultural Resources Database on DVD

1.0 INTRODUCTION

1.1 Intent and Purpose of the ICRMP

Department of Defense (DoD) policy requires installations and commands at various levels to develop and implement plans for the identification and management of archaeological and historic resources (DoD Instruction 4715.16, 18 September 2008, *Cultural Resources Management*). Army Regulation (AR) 200-1, *Environmental Protection and Enhancement,* includes the Army's policy for managing cultural resources to meet legal compliance requirements and to support the military mission. Specifically, AR 200-1 requires development of an Integrated Cultural Resource Management Plan (ICRMP) as a component of the installation's overall strategic planning process. The ICRMP serves as Fort A.P. Hill's internal compliance and management plan, integrating the entirety of the cultural resources program requirements with ongoing mission activities.

The purpose of this ICRMP is to provide guidance to Fort A.P. Hill staff on the management and maintenance of cultural resources. All personnel at Fort A.P. Hill are responsible for ensuring that mission related actions are carried out in compliance with statutory and regulatory requirements. Failure to comply with legal requirements like the National Historic Preservation Act (NHPA) can result in costly delays to critical mission activities. For this reason, cultural resource regulatory requirements should be coordinated and addressed early in project planning. Informed and reliable decision-making requires that critical Army mission requirements be balanced against a number of external factors. The guidance and recommendations in the ICRMP provide Fort A.P. Hill with tools to achieve this balance with cultural resources.

1.2 Location and Setting

United States Army Garrison Fort A.P. Hill is an all-purpose, year-round, military training center located predominantly in Caroline County, Virginia, with small portions in neighboring Essex County (Figure 1). Spanning 75,794 acres (including a 28,000-acre, live-fire range complex), Fort A.P. Hill is the largest range and training center in the National Capital Region, and one of the largest East Coast installations. The installation is 20 miles southeast of Fredericksburg and is situated roughly midway between Richmond, Virginia, and the Washington, D.C. metropolitan area. Bisected by U.S. Route 301, the installation includes maneuverable training areas in the north and roughly 28,000 acres of active, live-fire range complexes in the south.

The Installation rests on the upper Atlantic Coastal Plain and in the watersheds of the Rappahannock and Mattaponi Rivers. Fort A.P. Hill's terrain is rolling hills with some wetlands throughout post. Most of the installation is forested. To the south and west, the installation is bordered by forest, farmland, and the town of Bowling Green. Forests, farmland, housing subdivisions, and the town of Port Royal lie to the east and north.

Officially established on 11 June 1941, the A.P. Hill Military Reservation was created to provide large, unencumbered, maneuver areas and artillery ranges in anticipation of the oncoming war. The installation continues to provide valuable field and weapons familiarization training to date.

1.3 The Cultural Landscape Planning Approach

A "cultural landscape" is defined as a geographic area that includes natural and cultural resource features and their spatial relationships. Natural features include water bodies, vegetation cover, habitat areas, and terrain, while cultural components of the landscape consist of man-made or modified resources. A cultural landscape approach recognizes that the military installation is only the latest in a series of uses of the property, and that previous prehistoric and historic occupations have also had a significant effect on shaping the landscape.

An essential component of the cultural landscape approach is the development of a historic context for the installation. Human habitation of the Fort A.P. Hill property encompasses at least 8,000 years, from prehistoric Native American occupations, through colonial settlement and Civil War military encampments, to the twentieth-century conversion of the area from domestic/agricultural use to a military training facility. In order to understand the effect of past human activities on the landscape, the ICRMP includes a chronological historical framework for the property, emphasizing the social, economic, and technological developments that have altered the human relationship with the natural environment over time (Appendices Q, R, and S).

By integrating historic contexts, including documents, maps, and photographs, with previous archaeological research at Fort A.P. Hill and throughout the region, informed decisions can be made for identifying and evaluating the full range of cultural resources on the property. Through each era of its occupation, a variety of practical and cultural considerations have influenced how humans have dispersed themselves across the landscape, and how they interacted with their natural environment. Because the primary impetus behind these broad patterns of human activities is often the physical characteristics of the landscape (such as soil type, watercourses, and relief), the cultural landscape can provide valuable insight into previous land-use. By viewing topographic features in the light of regional cultural history, planners at Fort A.P. Hill can assess the potential for project areas to contain previously unidentified cultural resources.

1.4 Mission Statement

Fort A.P. Hill, a Regional Training Center, supports national readiness through realistic joint and combined arms training support to America's Defense Forces and contingency capability for the Mid-Atlantic and National Capital Regions. Fort A.P. Hill serves every U.S. Armed Forces component (active and reserve) and several federal agencies including Bureau of Alcohol, Tobacco, Firearms, and Explosives; Immigration and Naturalization Service; Federal Bureau of Investigations; and U.S. State Department; as well as state and local law enforcement agencies.

Mission operations and training conducted at Fort A.P. Hill ensure joint forces maintain properly trained and equipped units available for prompt mobilization in times of war, national and state emergency, or as otherwise needed. All training is intended to improve operational and strategic proficiency required for peacetime readiness, wartime mobilization, and the initiation and continuation of combat.

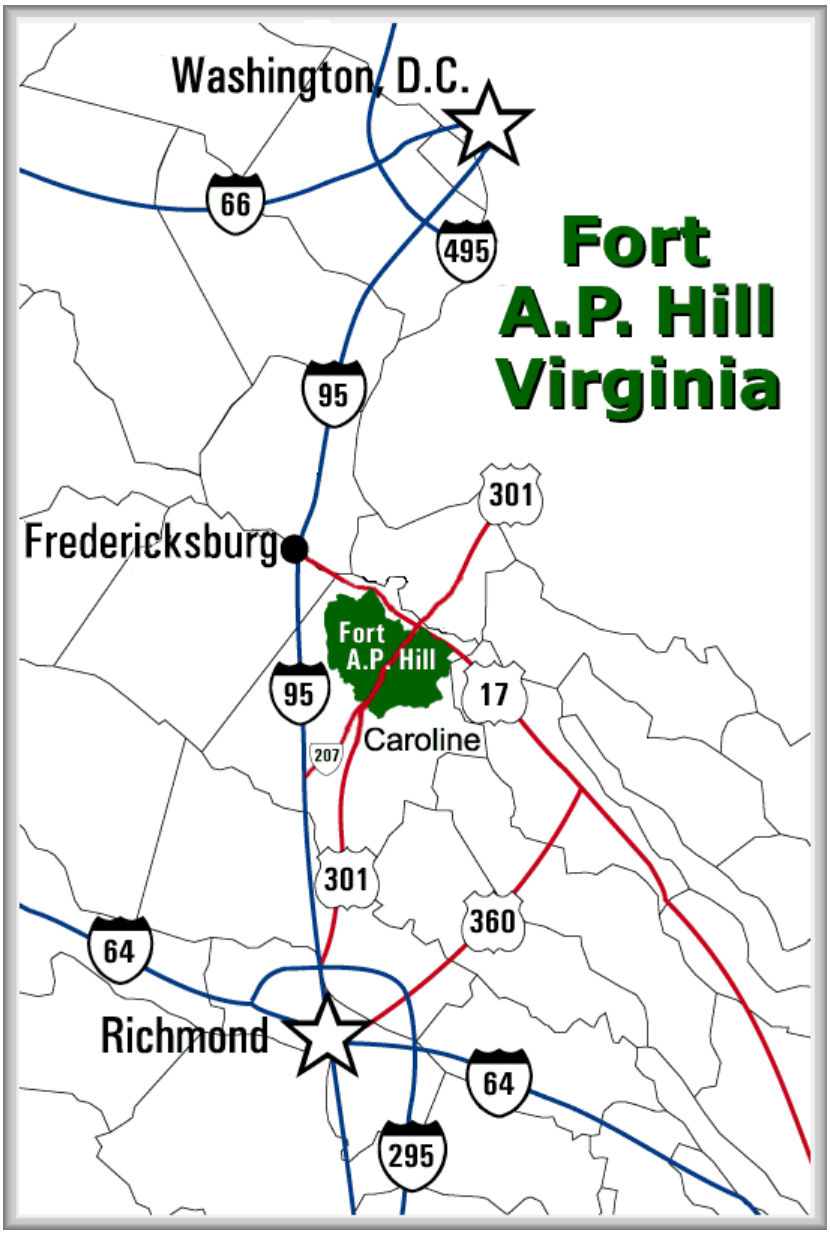

Figure 1: Location of Fort A.P. Hill in Caroline County.

2.0 SUMMARY OF HISTORIC PRESERVATION LAWS AND REGULATIONS

2.1 Federal Regulations

The principal Federal laws that govern Fort A.P. Hill's cultural resource program include:

- The **Antiquities Act of 1906** (Appendix A). This Act was intended to protect cultural resources on Federal lands through a permit process (replaced by the Archaeological Resources Protection Act) and the authority to create National Monuments.
- The **Historic Sites Act of 1935** (Appendix B). This Act established a national policy to preserve historic sites for public use "for the inspiration and benefit of the people of the United States." The Historic Sites Act was the basis for the Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey and the National Historic Landmarks Program.
- The **National Historic Preservation Act** (NHPA) of 1966 (as amended) (Appendix C). The NHPA seeks to safeguard the historic environment while advancing federally funded or permitted projects. The two key elements of the NHPA are:
  - Section 106, directs Federal agencies, when planning activities under their jurisdiction or control, to consider the effects to historic resources that are listed on or eligible for listing on the National Register of Historic Places. The Advisory Council on Historic Preservation has issued implementing regulations (36 CFR Part 800 [revised 2004]) that establish procedures for project review and public involvement to ensure that historic preservation and the public interest are factored into agency planning decisions.
  - Section 110, requires Federal agencies to locate, inventory, and nominate to the National Register of Historic Places all historically significant properties under their jurisdiction. The language in part of this section was derived directly from Executive Order 11593, Protection and Enhancement of the Cultural Environment (1971).
- The **National Environmental Policy Act** (NEPA) (1969) (Appendix E). The NEPA requires Federal agencies to determine the impacts of their activities upon the human and socioeconomic environment (including historic properties). Although NEPA compliance cannot be substituted for compliance with the NHPA, agencies may coordinate studies and documents completed under Section 106 with those required under the NEPA.
- The **Archaeological and Historic Preservation Act** (AHPA) (1974) (Appendix F). The AHPA requires Federal agencies to recover or protect archeological data that could be damaged by Federally funded or licensed construction projects.
- The **American Indian Religious Freedom Act** (AIRFA) (1978) (Appendix G). The AIRFA affirms the right of Native Americans to have access to their sacred places and promotes consultation with Indian religious practitioners. Activities under the AIRFA may be coordinated with consultations required under Section 106 of the NHPA.

- The **Archaeological Resources Protection Act** (ARPA) (1979) (Appendix H). The ARPA requires permits for archaeological excavations or removal of archaeological resources from Federally-owned properties and imposes Federal penalties on persons who excavate, remove, damage, or otherwise deface archaeological resources on Federal property without proper permits.
- The **Native American Graves Protection and Repatriation Act** (NAGPRA) (1990) (Appendix I). The NAGPRA governs the treatment of Native American cultural items recovered from lands controlled or owned by the United States.
- **Curation of Federally-Owned and Administered Archaeological Collections (36 CFR 79) -** (Appendix J). These regulations identify methods and standards for the treatment and storage of cultural resource collections; standards for repositories; and requirements for providing access to, and use of, collections.

2.2 Department of Defense Issuances

The principal Department of Defense issuance that governs Army cultural resources management is:

- **Department of Defense Instruction (DoDI) 4715.16, Cultural Resources Management**. DoDI 4715.16 establishes Department of Defense policy and assigns responsibilities to comply with applicable Federal statutory and regulatory requirements, Executive orders, and Presidential memorandums for the integrated management of cultural resources on DoD-managed lands. The required contents of ICRMPs are detailed in this DoDI.

2.3 Department of the Army Regulations

The principal Department of the Army regulation that governs Fort A.P. Hill's cultural resources program is:

- **Army Regulation (AR) 200-1, Environmental Protection and Enhancement**. AR 200-1 delineates the Army's policies, procedures, and responsibilities for the integrated management of cultural resources in support of the military mission and in compliance with Federal laws governing the protection, preservation, and treatment of cultural resources.

Under requirements and guidance provided in AR 200-1, Department of the Army Garrison Commanders must:

- Designate a Cultural Resources Manager (CRM) to coordinate the installation's cultural resources management program;
- Develop a comprehensive program to identify, protect, curate, and interpret the installation's cultural resources;
- As needed, establish a government-to-government relationship with Federally recognized tribal governments and other Native American organizations in accordance with Federal laws and regulations;

- Establish a consultation process between the CRM and installation staff, tenants, and other interested parties during the planning stages of activities or undertakings;
- Prepare and implement an installation-wide Programmatic Agreement (PA), where required, to streamline compliance with the NHPA and NAGPRA for on-going mission activities and operations;
- Integrate cultural resources management with installation training and testing, master planning, environmental impact analysis, natural resources and endangered species management planning, and the Integrated Training Area Management (ITAM) program.

3.0 PLANNING LEVEL SURVEY FOR FORT A.P. HILL

3.1 Previously Recorded Cultural Resources

As of 31 March 2013, the site inventory files at the Virginia Department of Historic Resources (VDHR) included 428 archaeological sites located on Fort A.P. Hill. Of this number, 45 represent Native American sites, 361 are historic period sites, and 22 sites have both prehistoric and historic components. National Register eligibility recommendations for these sites include: 259 sites recommended as not eligible, 155 sites recommended as potentially eligible, nine sites that have been determined eligible through consultation with the VDHR, and five sites for which recommendations have not been made. The VDHR has concurred with the eligibility recommendations for 108 sites recommended as potentially eligible and 220 sites recommended as not eligible. Appendix K provides a list of archaeological sites with site data and National Register eligibility recommendations.

Architectural surveys have identified 110 architectural resources on the installation, including the locations of 43 former cemeteries that were removed in the 1940s. The majority of the historic structures were constructed by the Army after 1941. Two architectural resources that predate the establishment of the installation have been determined eligible for inclusion in the National Register and have been listed in the Virginia Landmarks Register. These resources are (1) Liberty Church, a ca. 1850 brick, nave-plan church and (2) the Travis Lake Historic District, a 1930s summer retreat built around an antebellum mill pond. Appendix L provides a list of architectural resources with descriptive data and National Register eligibility recommendations. Appendix M includes copies of the National Register nomination forms for Liberty Church and the Travis Lake Historic District.

3.2 Previous Archaeological Surveys

As of 30 September 2012, a total of approximately 27,400 acres of the installation's 75,794 acres had been surveyed by professional archaeologists. A list of survey reports is included in Appendix N. Areas where surveys have been conducted are illustrated on installation topographic maps in Appendix O. All previously identified archaeological sites including map-projected sites are illustrated in Appendix P. The following is a summary of survey efforts conducted to date.

In the fall of 1977, Southside Historical Sites, Inc. (SHS) of Williamsburg, Virginia, initiated the first professional archaeological survey of an area within Fort A.P. Hill. A Phase I survey was completed for areas slated for development by the military. SHS used historic maps to guide their fieldwork in an attempt to pinpoint the locations of structures dating to the eighteenth and nineteenth centuries. In addition, selected drainages were tested to retrieve data for prehistoric sites. The survey strategy employed by SHS included pedestrian surface survey, surface collecting, and shovel testing.

In the late summer and fall of 1982, Mid-Atlantic Archaeological Research, Inc. (MAAR) of Newark, Delaware, completed a Phase I survey on 218 acres and Phase II evaluations on five

archaeological sites. In addition, MAAR was contracted to locate and test Windsor Manor, an eighteenth-century plantation site.

In 1991, New South Associates of Stone Mountain, Georgia, completed a Phase I survey of the 2.69-acre proposed ammunition storage point. Visual inspection of the proposed parcel indicted that much of the area had been previously disturbed by the construction of a gravel road and the existing storage facility.

In September 1991, Virginia Commonwealth University Archaeological Research Center (VCU) of Richmond, Virginia, completed a Phase I archaeological survey for a 54-acre proposed Virginia Military Academy and Infantry Training Detachment Center. Shovel test transects were placed at 50-foot intervals from east to west. No archaeological sites were recorded.

In June 1992, the College of William and Mary Center for Archaeological Research (WMCAR) of Williamsburg, Virginia, conducted a Phase I archaeological survey for the Centralized Vehicle Wash Facility. The fieldwork entailed the excavation of 144 shovel tests on 75-foot centers. No archaeological sites were recorded during this survey.

In November 1992, Louis Berger and Associates (LBA) of East Orange, New Jersey, conducted a Phase I survey of the 150 acre Regional Jail site. The survey was designed to provide specific locational information concerning the nature and distribution of archaeological resources. The entire tract was covered by a pedestrian survey and approximately 90 acres within the direct impact zone were systematically shovel tested. The LBA survey resulted in the identification of eight isolated finds and eight archaeological sites: two prehistoric, four historic, and two multi-component. None of the sites were considered eligible for the National Register. This property was excessed to Caroline County in September 1996.

In the spring of 1994, Dames and Moore was contracted to complete a Phase I survey on a four and one half-acre, circular timber landing area. Nine shovel tests were excavated at each of the four areas. No archaeological sites were discovered from these excavations.

In the summer of 1994, Gray and Pape, Inc. (Gray & Pape) of Richmond, Virginia, conducted a cultural resources inventory of the installation to assist the Army in compliance with Section 110 requirements of the National Historic Preservation Act. Gray & Pape developed a comprehensive historic context, completed Phase I archaeological and architectural surveys, and developed an archaeological site predicative model. Archaeological teams excavated shovel tests on 66-foot centers along twenty-nine transect corridors. These excavations resulted in the identification of 19 sites and 21 isolated finds.

From May 1995 through 1997, Cultural Resources, Inc. (CRI) of Williamsburg, Virginia, began a comprehensive series of related tasks necessary for the preparation of the ICRMP. Among the tasks completed, with accompanying stand-alone documents, were: curation of all available artifact collections; a museum facility study; conservation of selected artifacts for display; cultural resources background research for the Infantry Squad Battle Course in the southeast corner of the installation and the 27,000-acre range complex southeast of Route 301; review of existing data and fieldwork to verify the boundaries and integrity of 11 known sites for which

draft National Register nominations had been written; a resurvey of 22 known sites to correctly establish their location and condition; and the preparation of a cultural resources brochure. In addition, several maps were created for inclusion in Fort A.P. Hill's GIS database for planning purposes. For the entire installation, these graphic representations included: sensitive areas based on the location of circa 1940 homes and cemeteries thought to approximate the siting of their antecedents; the location of previous surveys; and known prehistoric and historic site locations. For the area southeast of Route 301, historic period sites predicted from old maps were also plotted. Finally, Confederate Winter Camps of 1862 - 1863, predicted from period cartographic maps were identified as sensitive areas in the northern part of the installation.

In 1996, Gray & Pape conducted a Phase I survey of the 10 acre Log Cabin Tract. This survey was conducted prior to the construction of cabins located near Bullock Lake. No archaeological sites were recorded during this survey.

In the summer of 1998, CRI conducted a Phase I archaeological survey on approximately 200 acres within the Boy Scout Jamboree area on Fort A.P. Hill. The Phase I survey was designed to provide an inventory of prehistoric and historic archaeological sites to provide information in order to accurately update the installation-wide Environmental Assessment and to be used as a basis for construction projects and other activities associated with future Boy Scout Jamborees. In addition, approximately 190 acres where a Civil War encampment was identified was walked-over to map the extent of the encampment. The survey resulted in the identification of ten isolated finds and six archaeological sites dating from Native American times to the early twentieth century.

In 1999, CRI was contracted to establish the boundaries of a cemetery discovered during training exercises. The machine-excavations revealed a cemetery and dwelling dating from the mid-eighteenth through the early nineteenth century. CRI completed a burial permit, treatment plan, and Phase III data recovery at the site. In addition CRI was contracted to complete a Phase I survey of two Master Planning areas and one Phase II evaluation within one of the Master Planning areas.

In 2000, CRI was contracted to complete a Phase I survey on 250 acres adjacent to the Boy Scout area, Phase I pedestrian surveys on six timber harvest areas, a Phase I pedestrian survey of 4350 acres in the northern area of the base to map Civil War activity and encampments, and a Phase I survey for the 20-acre Army Reserve Center. In addition, CRI was contracted to update the CRMP to an ICRMP.

In 2002, CRI conducted a Phase I archaeological survey of three proposed maneuver corridors. This survey resulted in the identification of four archaeological sites. CRI conducted Phase II evaluation investigations at two of these sites (44CE0426 and 44CE0427) and recommended both sites as eligible for inclusion in the National Register.

In 2003, John Milner Associates conducted a Phase I archaeological survey for the emergency services center at Fort A.P. Hill. This survey included an area of 5 acres and did not identify any cultural resources. Gray & Pape conducted a Phase I cultural resources survey for 7 acres associated with the Modified Record Fire Range. No cultural resources were identified during

this survey. Also in 2003, Thunderbird Archeological Associates conducted an archaeological survey of four firing points. No archaeological sites were identified.

In 2004, Gray & Pape conducted a Phase I cultural resources survey on an approximately 25 acre parcel associated with the 2005 Boy Scout Jamboree. One archaeological site was identified during this survey. Also in 2004, Gray & Pape conducted a Phase I archaeological survey of 150 acres associated with the Shoot House and Urban Assault Compound, identifying two archaeological sites, with Phase II evaluation investigations at one identified site (44CE0430).

In 2005, Gray & Pape conducted a Phase I archaeological survey of 30 acres associated with the Combined Arms Collective Training Facility. Also in 2005, Gray & Pape conducted a Phase I archaeological survey of two acres associated with a vehicle inspection area at the Early Drive gate. No cultural resources were identified during either of these surveys.

In 2006 Gray & Pape conducted Phase I archaeological surveys for proposed Asymmetric Warfare Group (AWG) projects. These projects included intensive-level survey of a 450-acre area that resulted in the identification of three archaeological sites, and a reconnaissance-level survey of 419-acres that resulted in the identification of four archaeological sites. The Fort A.P. Hill CRM conducted Phase II archaeological evaluation investigations at one identified site (44CE0465) and determined that the site is not eligible for inclusion in the National Register.

Also in 2006, the Fort A.P. Hill CRM began conducting cultural resource surveys in association with proposed forestry activities. A survey of nine forestry blocks located in the impact area resulted in the identification of seven archaeological sites. Surveys of forestry blocks in training areas 21, 23, 24, and 30 resulted in the identification of two archaeological sites.

Archaeological surveys for proposed Base Realignment and Closure (BRAC) related projects were conducted in 2006 by the Louis Berger Group, Inc., and Versar, Inc. These surveys resulted in the identification of 41 archaeological sites and the relocation of 11 previously recorded archaeological sites. In 2007, the Fort A.P. Hill CRM conducted additional investigations at nine archaeological sites identified by Versar and determined that none of the nine sites are eligible for inclusion in the National Register. Also in 2007, The Louis Berger Group completed archaeological evaluations at 24 of the archaeological sites, determining that 10 of the sites are eligible for inclusion in the National Register.

In 2007, the Fort A.P. Hill CRM conducted an archaeological survey of proposed tree removal at the Directorate of Plans, Training, Mobilization, and Security, during which no archaeological sites were identified. The CRM also conducted a cultural resource survey for a proposed convoy live fire course. Although no cultural resources were identified on Fort A.P. Hill, seven off-installation architectural resources were recorded. Paciulli, Simmons and Associates conducted a Phase I cultural resources survey for proposed cabins at Travis Lake, resulting in a recommendation that the project would have no adverse effect on the Travis Lake Historic District. No archaeological sites were identified during the cabin survey.

During 2007 the Fort A.P. Hill CRM established a formal SOP for conducting cultural resource

surveys in association with proposed forestry activities, allowing the CRM to submit executive summaries of forestry-related surveys to the VDHR for project review. The SOP also requires the preparation of semi-annual technical reports that compile the results of all forestry-related executive summaries for the previous six months. The SOP was submitted to the VDHR and received concurrence that the procedures set forth are consistent with Fort A.P. Hill's obligations under the NHPA. In 2007, the CRM began submitting executive summaries to the VDHR for review and completed the first semi-annual report. The July 2007 report included 28 forestry area surveys where six previously recorded archaeological sites were encountered.

Additional surveys conducted by the Fort A.P. Hill CRM in 2007 included a cultural resource survey of a proposed fire house at Heth and an archaeological survey for a proposed temporary Navy Breacher Facility. No archaeological sites were identified during either survey. A cultural resource survey for water control structure repairs at Smoots Pond recorded the existing structure as an architectural resource that is not eligible for inclusion in the National Register. In January 2007, 27 forestry area surveys were completed for the second semi-annual forestry report, resulting in the re-location of two previously recorded sites and identification of five new sites.

A number of significant cultural resource developments occurred in 2008. These included the finalization of a five-year revision to the ICRMP, completion of additional archaeological surveys for BRAC-related explosive ordnance demolition activities (by the Louis Berger Group, Inc.) and archaeological evaluations at two sites (by the Fort A.P. Hill CRM), and the execution of a Programmatic Agreement (PA) for BRAC-related activities at Fort A.P. Hill. The PA marked the first-ever use of conservation easements on off-installation historic properties to mitigate adverse effects to on-installation historic properties. The PA also paired minor additional field investigations on Fort A.P. Hill with outreach programs that invited hands-on participation by the public and produced reports and videos of the investigations. During 2008, the conservation easement was established and on-installation investigations had begun and Civil War-era and domestic sites.

The July 2008 semi-annual forestry report included 72 forestry area surveys that resulted in the re-location of 24 previously recorded sites and the identification of 22 new sites. A cultural resource survey for a permanent breacher facility was conducted by Paciulli, Simmons and Associates, resulting in the re-location of one archaeological site. Additional surveys conducted by the Fort A.P. Hill CRM in 2008 included a cultural resource survey of Wilcox Camp and archaeological surveys for a proposed airfield clearing, Firing Point 1 (where one previously unrecorded site was identified), three proposed maneuver corridors (where two previously recorded sites were re-located), a fire training center, an unmanned aerial vehicle (UAV) airstrip (where one previously recorded site was re-located and four new sites were identified), and the proposed replacement of Perrin and Gregg/Lent bridges.

In 2009, all field investigations and reports were completed for all of the Civil War-era sites and domestic sites included in the stipulations of the BRAC PA. Field investigations for all but one of the sites was conducted by Paciulli, Simmons and Associates, with investigations at the remaining domestic site (44CE0110) conducted by the Louis Berger Group, Inc. All of the investigations included hands-on opportunities for members of the public and descendents of

former residents to participate in the fieldwork. Reports and videos of the investigations were sent to the consulting parties to the BRAC PA and made available to the public on-request.

Cultural resource surveys were initiated in 2008 and 2009 by Paciulli, Simmons and Associates for proposed AWG and Infantry Platoon Battle Course (IPBC) projects. The AWG project resulted in the re-location of one previously recorded archaeological site and the identification of nine new sites. Additional investigations were recommended at three sites (44CE0591, 44CE0596, and 44CE0597). The IPBC project resulted in the re-location of one previously recorded archaeological site and the identification of nine new sites. Additional investigations were recommended at three sites (44CE0472, 44CE0586, and 44CE0589).

The Fort A.P. Hill CRM completed two semi-annual forestry reports. The January report included 33 forestry area surveys that resulted in the re-location of five previously recorded sites and the identification of 11 new sites. The July report included seven forestry area surveys that re-located 15 previously recorded sites and identified nine new sites.

Other surveys conducted in 2009 by the Fort A.P. Hill CRM included archaeological surveys for proposed latrine facilities at Ranges 8 and 9, proposed training facilities at Powers Road corner (where one previously recorded site was re-located), and proposed improvised explosive device (IED) training facilities.

In 2010, the Fort A.P. Hill CRM completed cemetery investigations for 26 former cemeteries that were reportedly removed in the 1940s. The investigations, which commenced in 2008, were intended to determine if intact burials were present at former cemetery locations in areas of proposed developments. Using electrical resistivity and ground penetrating radar equipment, the investigations identified former graves and determined that the identified graves represented exhumed burials that had been reinterred off-installation.

Paciulli, Simmons, and Associates completed a cultural resource survey in 2010 for a proposed Army Reserve Center at Fort A.P. Hill. The survey resulted in the identification of one previously unrecorded archaeological site.

The Fort A.P. Hill CRM completed several other surveys in 2010, including archaeological surveys for the Wilcox scrap yard and proposed Burma Road bridge replacement, and additional cultural resource investigations for the AWG. The AWG investigations included the evaluation of three sites (44CE0591, 44CE0596, and 44CE0597) and resulted in the recommendation that all three sites are not eligible for inclusion in the National Register.

The Fort A.P. Hill CRM completed two semi-annual forestry reports. The January report included 17 forestry area surveys that resulted in the re-location of 10 previously recorded sites and the identification of four new sites. The July report included 10 forestry area surveys that re-located 10 previously recorded sites and identified two new sites.

Changes to proposed BRAC-related EOD activities at Fort A.P. Hill resulted in additional investigations by the Fort A.P. Hill CRM in 2010. These investigations resulted in the

documentation of potential off-installation architectural resources and recommended that the proposed undertaking would have no adverse effects to historic properties. The BRAC PA was officially amended in 2011 to include the results of the additional investigations and to address future changes to the scope of the BRAC-related activities at Fort A.P. Hill.

The CRM completed two semi-annual forestry reports in 2011. The January report included 10 forestry area surveys that resulted in the re-location of 12 previously recorded sites and the identification of one new site. The July report included 22 forestry area surveys that re-located 15 previously recorded sites and identified 14 new sites.

Additional surveys conducted by the Fort A.P. Hill CRM in 2011 included an archaeological survey for a proposed American Water administrative building and archaeological evaluations at sites 44CE0062, 44CE0431, and 44CE0469. Field excavations for evaluations were commenced at four sites (44CE0062, 44CE0431, 44CE0469, and 44CE0083) in 2010, with investigations at all but Site 44CE0083 completed in 2011. The evaluations resulted in determinations that sites 44CE0062, 44CE0431, and 44CE0469 are not eligible for inclusion in the National Register.

The Louis Berger Group, Inc. completed an archaeological survey of a proposed Pender Camp wastewater force main in 2011. The survey resulted in the identification of one previously unrecorded archaeological site, four artifact locations, and three isolated finds.

Also in 2011, final investigations were conducted in association with the IPBC project. Paciulli, Simmons, and Associates completed additional fieldwork at Site 44CE0472. The investigations resulted in the re-mapping of Site 44CE0472 and division of the site into two separate sites (44CE0472 and 44CE0690), as well as the formal recordation of 10 off-installation architectural resources. Sites 44CE0472 and 44CE0690 were recommended as not eligible for inclusion in the National Register. The Fort A.P. Hill CRM completed investigations at sites 44CE0586 and 44CE0589, resulting in the determination that these two sites are not eligible for inclusion in the National Register. The CRM's investigations also recommended that the 10 off-installation architectural resources are not eligible for inclusion in the National Register and that the proposed undertaking would have no adverse effects to historic properties.

The Fort A.P. Hill CRM completed two semi-annual forestry reports in 2012. The January report included 11 forestry area surveys that resulted in the re-location of five previously recorded sites and the identification of five new sites. The July report included 24 forestry area surveys that re-located 26 previously recorded sites and identified 22 new sites.

Additional surveys conducted by the Fort A.P. Hill CRM in 2012 included archaeological surveys for proposed minehound lanes, Ammunition Supply Point modifications, and an unmanned aircraft system landing strip.

The CRM's January 2013 semi-annual forestry report included 18 forestry area surveys that resulted in the re-location of one previously recorded archaeological site and the identification of four new sites.

3.3 Previous Architectural Surveys

In the summer of 1994, Gray & Pape completed a comprehensive architectural survey of Fort A.P. Hill. Seventy-four architectural resources were evaluated on the installation. The majority of the resources surveyed date to the World War II construction phase of the installation. There are, however, several architectural resources which predate the establishment of the installation. Two such resources have been determined eligible for listing in the National Register and are listing in the Virginia Landmarks Register. These are Liberty Church and the Travis Lake Historic District. Appendix M includes copies of the National Register nomination forms for Liberty Church and the Travis Lake Historic District.

In 2004, Gray & Pape conducted an architectural survey of buildings over 45 years of age at Fort A.P. Hill. This survey resulted in the identification of 23 architectural resources and the recommendation of one identified dwelling (VDHR No. 016-0349-0056) as potentially eligible for inclusion in the National Register.

In 2005, John Milner Associates conducted a condition assessment for six historic structures and recommended corrective actions to be taken to preserve the integrity of the structures. The report focused on Liberty Church and five structures in the Travis Lake Historic District (including the Lodge and Barn).

The Fort A.P. Hill CRM recorded three former cemetery locations as both archaeological sites and architectural resources in 2006. These resources represent the former locations of historic cemeteries that were removed by the Army in the 1940s. Former cemeteries are recorded as both archaeological sites and architectural resources to ensure that potential aesthetic effects such as noise or visual impacts, which rarely affect archaeological sites, are properly considered in light of the former funerary nature of the resources.

The Fort A.P. Hill CRM's 2007 cultural resource survey for the proposed Heth fire house involved investigations at Building TT0205 (VDHR No. 016-0349-0011) and resulted in the Mica Headquarters Historic District (previously determined not eligible for inclusion in the National Register) being assigned VDHR No. 016-5031. Also in 2007, Smoots Pond water control structure was assigned VDHR No. 016-0349-0058 during the CRM's cultural resource survey for water control structure repairs. The structure was recommended as not eligible for inclusion in the National Register.

Several architectural resources have been recorded as a result of forestry area surveys. A former cemetery location was recorded as VDHR No. 016-0349-0059 in the Fort A.P. Hill CRM's January 2008 semi-annual forestry report. The July 2008 semi-annual forestry report recorded VDHR Nos. 016-0349-0057 (a shed) and 016-0349-0060 through 016-0349-0065 (six former cemetery locations). Three additional former cemetery locations were recorded as VDHR Nos. 016-0349-0068 through 016-0349-0070 in the January 2009 semi-annual forestry report. VDHR Nos. 016-0349-0068 and 016-0349-0069 were revisited during surveys included in the July 2011 semi-annual forestry report.

During the 2008 survey conducted by Paciulli, Simmons and Associates, two former cemetery locations were recorded as VDHR Nos. 016-0349-0071 and 016-0349-0072. And in 2009 Paciulli, Simmons and Associates recorded the cemetery component at Civil War-era archaeological site 44CE0402 as VDHR No. 016-0349-0073.

The Fort A.P. Hill CRM's 2010 report on cemetery investigations for 26 former cemeteries included VDHR Nos. 016-0349-0072 and 016-0349-0074 through 016-0349-0098.

3.4 Oral History Project

The Fort A.P. Hill Oral History Project commenced in 2007 as an opportunity to record the stories and memories of those who lived and worked in the area prior to the establishment of Fort A.P. Hill. The Oral History Project collected 82 hours of interviews from 58 participants, as well as 300 scanned historic photographs. Many of the interviews and photographs were compiled into a book titled *Wealthy in Heart: Oral History of Life Before Fort A.P. Hill*. A video slideshow that combines excerpts from recorded interviews with collected images was also produced. The printed book and the video were distributed to libraries and the public, and made available to the public on-request. Digital copies of these materials are also available.

3.5 Archaeological Site Modeling

3.5.1 Previous Modeling Approaches

In December of 1994, Gray & Pape completed a Phase I cultural resources inventory of Fort A.P. Hill based upon a sampling strategy. Zones of archaeological probability were identified which were accompanied by planning area recommendations. Although the approach and subsequent recommendations were not accepted in their entirety by the VDHR, the study provided some useful data to Fort A.P. Hill staff for making preliminary decisions regarding resource types and locations. In an attempt to provide more comprehensive guidance for addressing archaeological resources at Fort A.P. Hill, CRI developed a site predictability model in 2003. A map for this model is located in Appendix Q.

CRI's model combined inductive use of locational data for known and map-projected sites with deductive assumptions based on elevation, slope, aspect, soil type, and distance to water to predict the locations of sites. The research criteria defined by CRI are included in Appendix Q. This model has been of limited use in predicting cultural resource locations and no further predictability models have been developed.

3.5.2 Current GIS Approach to Modeling

Current modeling is based primarily on geographic information system (GIS) data developed and maintained by the Fort A.P. Hill CRM. The GIS allows the integration of spatial data (such as locations of archaeological sites, architectural resources, surveyed areas, and excavation units) and historical documents (such as deed book pages, oral history interviews, photographs, site/resource inventory forms, and survey reports) with current and historic aerial imagery and maps, to provide ready access to information relative to proposed project areas.

For this revision of the ICRMP, Paciulli, Simmons and Associates conducted extensive property research utilizing the Fort A.P. Hill GIS data and pre-Army aerial imagery. Using this data, Paciulli, Simmons and Associates identified those former land tracts with the highest potential for late nineteenth- and early twentieth-century resources. Thorough research was then conducted for a sample of these identified tracts and the results were compiled into Appendix S (Appendix T contains a map depicting the former land tracts). The incorporation of this research into the Fort A.P. Hill GIS will help to identify many currently unrecorded resources and provide important information to evaluate archaeological sites. This research will also aid in future installation planning and development by providing historical site information for analysis with other land use data.

3.6 Collections

Artifact collections from the SHS survey and the MAAR excavations were stored for a period of years in non-archival paper bags and containers in a cement well house at Fort A.P. Hill. Many of the artifact bags were labeled only with the temporary site number assigned in the field. In 1997, CRI was contracted to identify and prepare these and other materials stored at Fort A.P. Hill for curation. All collections were subsequently moved to the VDHR in Richmond for curation in accordance with 36 CFR Part79, with additional collections also curated at the VDHR. A Memorandum of Understanding (MOU) for curatorial services was signed by Fort A.P. Hill and the VDHR in 2004.

In 2005, Fort A.P. Hill signed a Memorandum of Agreement (MOA) for curatorial services allow collections to be curated at the Fort Lee Regional Archaeological Curation Facility. Under this MOA, all new collections were sent to Fort Lee for curation, while old collections remained at the VDHR. The 2004 MOU between Fort A.P. Hill and the VDHR was mutually terminated by both parties in 2008 through the signing of a termination of services agreement. All Fort A.P. Hill collections held at the VDHR were transferred to the Fort Lee Regional Archaeological Curation Facility.

In 2010, a Memorandum of Understanding for Curatorial Services was signed by Fort A.P. Hill and Fort Lee. The MOU continues the curation of old and new collections from Fort A.P. Hill at the Fort Lee Regional Archaeological Curation Facility.

4.0 CULTURAL RESOURCES IDENTIFICATION, PROTECTION, AND EVALUATION

4.1 Archaeological Resources Identification and Evaluation

The purpose of this section is to provide a schedule for future surveys and sound historic preservation guidance for the continued treatment of archaeological resources at Fort A.P. Hill.

4.1.1 Damage to Archaeological Resources

4.1.1.1 Damage from Natural Forces

Archaeological resources can be damaged by natural forces such as erosion from wind or water. Short term flooding of an area or long-term inundation by water can impact cultural resources. Forest fires can damage sites and artifacts.

4.1.1.2 Damage from Non-Military Activities

Damage to archaeological resources can be intentionally caused by human activities such as looting, theft, and vandalism. Damage can also be unintentional as is the case with agricultural activities, timbering, recreational land use, and land development.

4.1.1.3 Damage from Military Activities

Damage to archaeological resources can be caused by military training operations such as movement of heavy equipment, digging of trenches used in training, or any ground disturbing activities associated with establishing bivouac sites or command sites.

4.1.1.4 Damage from Natural Resources Management

Damage can also be caused through natural resources management. Fire from prescribed burns used to control vegetation growth can damage sites and artifacts. Timbering to open land for military training can disturb archaeological resources and damage sites.

4.1.2 Preservation Strategies for Archaeological Resources

Fort A.P. Hill has a wide variety of archaeological resources ranging from prehistoric campsites to colonial plantation sites to Civil War encampments. Because of the fragile nature of archaeological resources, there are a variety of forces and/or circumstances that can damage or destroy them.

4.1.2.1 Documentation of Threatened Resources

All resource types and areas that are threatened by or experiencing non-authorized actions such as vandalism and/or looting should be identified and the severity of the threat recorded. Field inspections, conducted in coordination with Conservation Law Enforcement officers by archaeologists who meet the *Secretary of the Interior's Professional Qualifications,* should be conducted of all areas and sites identified as experiencing or suspected of experiencing looting or vandalism. Documentation of the field inspection should include:

- identification of the area on the appropriate U.S. Geological Survey (USGS) topographic map;
- Description of the level, nature, and extent of the destruction;
- Identification of any evidence left behind that may suggest who was involved in the unauthorized activity;
- Photographic evidence of the general area and the specific damage;
- Estimation of the type and amount of cultural material disturbed; and
- Approximation of the size of the remaining resource.

Documentation of field inspections should be used to develop prioritized lists of threatened sites or areas requiring more aggressive management and enforcement activity.

4.1.2.2 Periodic Monitoring of Archaeological Resources

Once an archaeological resource has been identified as threatened, a monitoring program needs to be designed that provides for periodic visits to check on site condition, perform routine maintenance if necessary, and to determine if the resource or area is being damaged or is in imminent danger of damage or loss. If damage is observed, additional steps must be developed to correct, reduce, or eliminate the threat.

4.1.2.3 Intentional Site Burial

Intentionally covering or burying an archaeological resource can be an effective technique for resource stabilization and protection. Before deciding to protect an archaeological resource through site burial, it is important to fully consider the site's characteristics (e.g. artifacts, features) and how they will react physically and chemically to burial. Special considerations of site burial include:

- How will drainage patterns be affected,
- Will the material used for burial result in increased decay or introduce new destructive processes, and
- Whether burial will render the site inaccessible for future research.

Once site burial has been completed, the new land surface should be planted with a protective vegetative cover to ensure stability of the new surface. Specific guidelines for intentional site burial can be found in the U.S. Army Corps of Engineers publication entitled *The Archaeological Sites Protection and Preservation Notebook.*

4.1.2.4 Re-Vegetation

An effective and low-cost strategy for protecting archaeological resources from erosion and excessive surface disturbance is the planting and maintenance of vegetation over the site. Several issues should be considered before deciding whether or not to employ vegetation as part of an overall site protection strategy. Such issues include how the site area will be used and how this will affect the plant species selected, as well as what level of public access is anticipated.

When selecting plant species for vegetative cover, consideration should be given to the following:

- Species that require little care or maintenance are ideal;
- Plant species native to the site will be the most effective and not draw attention to the area; and
- Large vegetation, especially trees with heavy crowns, large lateral root systems, or deep root systems should be avoided, as they will disturb intact cultural deposits.

4.1.2.5 Signage

Placement of signs identifying prohibited actions and warning of penalties and violations can be effective tools for reducing looting, vandalism, and inadvertent site damage. Interpretive signage can also serve to increase the visitor's awareness of the significance and fragile nature of the resource. Signs can also be used to provide notice of protected resource boundaries, direct visitor traffic, and notify visitors of legal protections and penalties for violation. The regular placement of signs makes it easier to prosecute violators in court under the provisions of ARPA.

Example of Prohibited Activities Signage

Signage is rarely used by itself as a protection strategy. More typically, it is a component of a broader site protection and management strategy involving law enforcement and regular site monitoring. Before deciding to place signage at a site, the following questions should be considered:

- What is the nature of the threat to the resource and is signage an appropriate response,
- What is the visibility and accessibility of the resource,
- What is the purpose the sign is to serve, and
- Will the sign increase the threat to the resource.

As a general rule, archaeological resources that are not threatened or are located in remote areas should not be signed. Similarly, threatened resources in highly visible and accessible areas should have signs prominently displayed.

4.2 Architectural Resources Identification and Evaluation

The purpose of this section is to provide sound historic preservation guidance for the continued treatment of historic buildings at Fort A.P. Hill.

4.2.1 Damage to Architectural Resources

4.2.1.1 Damage from Natural Forces

Damage to architectural resources can be caused by natural forces such as erosion or poor drainage that undermines building foundations. Short term flooding of buildings or long-term inundation by water can cause damage. Forest fires can damage historic buildings and associated structures.

4.2.1.2 Damage from Non-Military Activities

Damage to architectural resources can be intentionally caused by human activities such as looting, theft, and vandalism. Damage can also be unintentional as is the case with neglect, poor maintenance, and building renovation and rehabilitation, which changes the original character of the structure.

4.2.1.3 Damage from Military Activities

Damage to architectural resources can be caused by military training operations such as movement of heavy equipment, use of explosives, or other activities which cause the building to shake, use of chemical agents which may affect the building materials, or use of fire inside or nearby the building which may cause fire damage.

4.2.1.4 Damage from Natural Resources Management

Damage can also be caused through natural resources management. Fire from prescribed burns used to maintain vegetation can get out of control and damage structures. Timbering to open land for military training can disturb architectural resources and surrounding sites.

4.2.2 Preservation Strategies for Architectural Resources

4.2.2.1 Documentation of Threatened Resources

All resource types and areas that are threatened by or experiencing non-authorized actions such as vandalism and/or looting should be identified and the severity of the threat recorded. Field inspections, conducted in coordination with Conservation Law Enforcement Officers by qualified archaeologists (as defined by the *Secretary of the Interior's Professional Qualifications)*, should be completed in all areas identified as experiencing or potentially experiencing looting or vandalism. Documentation of the field inspection should include:

- Identification of the area on the appropriate U.S.G.S. topographic map;

- Description of the level, nature, and extent of the destruction;
- Identification of any evidence left behind that may suggest who was involved in the unauthorized activity;
- Photographic evidence of the general area and the specific damage;
- Estimation of the type and amount of cultural material disturbed; and
- Approximation of the size of the remaining resource.

Documentation of field inspections should be used to develop prioritized lists of threatened sites or areas requiring more aggressive management and enforcement activity.

4.2.2.2 Periodic Monitoring of Architectural Resources

Once an architectural resource has been identified as threatened, a monitoring program should be designed that provides for periodic visits to check on site condition, perform routine maintenance if necessary, and determine if the resource or area is being damaged or is in imminent danger of damage or loss. If damage is observed, additional steps must be developed to correct, reduce, or eliminate the threat.

4.2.2.3 Signage

Placement of signs identifying prohibited actions and warning of penalties and violations can be effective tools for reducing looting, vandalism, and inadvertent building damage. Interpretive signage can also serve to increase the visitor's awareness of the significance and fragile nature of the historic resource. Signs can also be used to provide notice of protected resource boundaries, direct visitor traffic, and notify visitors of legal protections and penalties for violation. The regular placement of signs makes it easier to prosecute violators in court under the provisions of ARPA and DA no trespassing laws as applicable.

Signage is rarely used by itself as a protection strategy. More typically, it is a component of a broader site protection and management strategy involving law enforcement and regular site monitoring. Before deciding to place signage at a site, the following questions should be considered:

- What is the nature of the threat to the resource and is signage an appropriate response,
- What is the visibility and accessibility of the resource,
- What is the purpose the sign is to serve, and
- Will the sign increase the threat to the resource.

As a general rule, architectural resources that are not threatened or are located in remote areas should not be signed. Similarly, threatened resources in highly visible and accessible areas should have signs prominently displayed.

4.3 Inventory of Cultural Resources on Fort A.P. Hill

All buildings and structures that may represent architectural resources are identified and evaluated as they reach 50 years of age. Sites that may represent architectural resources (e.g., former cemeteries) are identified and evaluated on a project by project basis. Archaeological investigations on Fort A.P. Hill are on-going. An inventory of the archaeological sites and recommendations for further work is listed in Appendix K. An inventory of historic buildings and historic districts and a notation of VDHR recommendations are listed in Appendix L.

4.4 Inventory Schedule and Planned Undertakings

Ongoing archaeological surveys are being conducted in association with proposed forestry, Base Realignment and Closure (BRAC), and installation mission-related activities. Some projects that will be carried out in the next five years include:

- Surveys of proposed forestry blocks will continue to be conducted in accordance with the Fort A.P. Hill SOP for Cultural Resource Surveys Conducted in Association with Proposed Forestry Activities (SOP 19).
- Surveys and other archaeological investigations associated with BRAC-related activities at Fort A.P. Hill are also ongoing, and include alternative methods of mitigating adverse effects to historic properties identified during previous BRAC-related archaeological surveys.
- Fort A.P. Hill will conduct archaeological evaluations at the former Garrett Farm property (44CE0085) where John Wilkes Booth was apprehended on 26 April 1865, after the assassination of Abraham Lincoln. The investigations will seek to determine if the site retains any cultural features or deposits associated with Booth.
- An archaeological identification survey of the Buzzard Roast Pond area will be conducted to determine if any prehistoric or historic resources may be affected by potential development in that area.
- Continued research will be conducted into the historical uses of former land tracts at Fort A.P. Hill, with the goal of expanding the land ownership context (included in this ICRMP as Appendix S) to include data for all of the former tracts that had late nineteenth- to mid twentieth-century occupations.
- In association with the Sesquicentennial of the Civil War, archaeological investigations will be conducted at Civil War-era resources located at Fort A.P. Hill. These investigations will include the re-identification of known resources and the archaeological evaluation of previously unevaluated sites. Within the limits of mission requirements, every effort will be made to incorporate public involvement in these investigations.

5.0 INSTALLATION MANAGEMENT PLAN

5.1 Internal Consultation and Coordination

- The CRM within the Environmental and Natural Resources Division (ENRD) is responsible for reviewing all projects which may have an impact on cultural and historic resources on Fort A.P. Hill. The CRM must be notified of a project prior to development of scope and cost estimates. This early notification ensures compliance with Federal laws and regulations during the planning phase. Early notification also ensures that historic property concerns can be fully considered during project planning.
- The CRM works with the Directorate of Plans, Training, Mobilization, and Security (DPTMS) historic preservation liaison on projects with the potential to affect historic resources. The liaison serves as a point of contact for reporting and coordinating historic property issues as a result of DPTMS actions.
- Preservation treatments and guidelines are integrated into Work Orders and Direct Maintenance Orders to ensure that adverse effects are either eliminated or mitigated in accordance with guidelines provided by the Virginia State Historic Preservation Officer (VASHPO).
- On-going projects are inspected to ensure implementation of agreed upon mitigation measures and appropriate treatment of historic property.
- At least once every five years the CRM and the other Environmental Staff of Fort A.P. Hill will review the ICRMP to ensure accuracy and appropriateness.

5.2 External Consultation and Coordination

The CRM will act as the liaison between Fort A.P. Hill and any outside cultural resources agency including the VDHR/VASHPO, and the Advisory Council on Historic Preservation (ACHP). The CRM in conjunction with the Fort A.P. Hill Garrison Commander will consult with any Tribal Historic Preservation Officer (THPO). The CRM will consult with the Directorate of Public Works (DPW), the DPTMS, and any other post directorate or division as necessary to ensure the needs of Fort A.P. Hill are accurately expressed during consultation and coordination with these outside agencies. Specific consultation requirements are provided under Section 6, Standard Operating Procedures.

5.3 Proactive Management Strategies

Federal agencies are required to actively plan for and take into account cultural resources as they carry out their missions. Active resource identification and evaluation programs enable agencies to continually develop their cultural resource database, which results in more accurate and balanced decision-making. Integrating cultural resources into their on-going missions and activities, and streamlining Federal review processes are also central components to successful planning. The following actions are planned to occur over the next five years at Fort A.P. Hill.

5.3.1 Resource Identification

The following actions are proposed in order to conduct cultural resource identification and evaluation efforts in accordance with the provisions of Section 110 of the NHPA.

5.3.1.1 Archaeological Resources

- Pedestrian surface survey to identify and assess the condition of Civil War-era resources, as the 150th anniversary of the Civil War may make these sites more susceptible to looting and vandalism.
- Ongoing pedestrian surface survey and subsurface testing of proposed forestry blocks prior to forestry activities.
- Archaeological survey and evaluation of former cemetery locations to determine if unmarked graves are present.
- Archaeological evaluations of previously identified archaeological sites to determine eligibility for inclusion in the National Register.
- Development and use of LIDAR (Light Distancing and Ranging) technology to conduct non-ground-disturbing inventory of installation cultural resources.

5.3.1.2 Architectural Resources

- Evaluation of all architectural survey data, ten (10) years of age and older, planned periodically to ensure that the passage of time and changing perceptions of significance are appropriately considered, taken into account, and documented.
- Review of architectural data planned by or under the direct supervision of a person or persons who meet the Secretary of the Interior's Professional Qualification Standards for architectural history.

5.3.2 Resource Evaluation

5.3.2.1 Archaeological Evaluation

- Evaluation of Site 44CE0085 (Garrett Farm) to determine the integrity of the site relative to the events associated with John Wilkes Booth.
- Evaluations of Civil War-era sites that have not been previously evaluated.
- Recordation in the installation GIS database of all archaeological resources on Fort A.P. Hill that are eligible for inclusion in the National Register.

5.3.2.2 Architectural Evaluation

- Liberty Church and the Travis Lake Historic District should be evaluated every 10 years to ensure that the significant characteristics that qualify these properties for listing in the National Register are still present.

5.3.3 Resource Mapping and Recordation

- Recordation in the installation GIS database of the results and location of all archaeological survey conducted at Fort A.P. Hill.
- Completion of VDHR archaeological site inventory forms for all newly identified archaeological sites and architectural resources.
- All archaeological investigations will be conducted and documented in accordance with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation*, and the VDHR's guidance entitled *Guidelines for Archeological Investigations in Virginia* and guidance for preparing cultural resource management reports. A copy of all survey reports will be submitted to the VDHR archives. Copies of all survey documents will also be maintained at the ENRD and at the Fort Lee Regional Archaeological Curation Facility.

5.3.4 Collections

- All collections will be curated in accordance with 36 CFR Part 79, *Curation of Federally-Owned and Administered Archeological Collections* and VDHR curation guidelines.
- For future surveys and excavations conducted at Fort A.P. Hill, acid-free copies of all of the field notes, maps, and photographs will be submitted with artifact collections. Field notes and maps will be requested from contractors whose excavations result in no archaeological resources being discovered, since negative results are also important for predictive modeling purposes. Digital copies of all paperwork will be included with project curation materials.
- Artifacts recovered from investigations will be stored in a secure fireproof facility on the installation until they are transferred to the Fort Lee Regional Archaeological Curation Facility for permanent curation.

5.3.5 ICRMP Updates and Revisions

The planning cycle for the ICRMP is five years. Because planning is a dynamic process subject to a variety of factors, the contents and guidance of the document will be reviewed annually. Substantive changes in program goals or DoD policy will be addressed as they occur.

5.4 Personnel Training

Fort A.P. Hill will develop and implement a training program designed to increase the awareness and sensitivity of military personnel to historic preservation issues. This training will be provided on an annual basis to Fort A.P. Hill personnel and to visiting troops operating in areas where sensitive cultural resources may be located. This training is provided during Annual Training in-brief.

Archaeological Resources Protection Act (ARPA) training will be conducted annually to provide installation staff with a basic understanding of the procedures for conducting archaeological investigations on Fort A.P. Hill, and the penalties for violations. This training will be coordinated with Fort A.P. Hill law enforcement personnel to ensure that officers are aware of the ARPA and how the ARPA is implemented.

Fort A.P. Hill, in cooperation with the VASHPO as appropriate, will provide annual training to personnel responsible for maintaining and repairing historic structures on the installation and for decision making about maintenance and repair of these structures.

5.5 Management and Treatment Strategies

Management and Treatment Strategies for Fort A.P. Hill cultural resources follow requirements given in Section 106 through the process defined in 36 CFR Part 800 Subpart B. The following provides a summary of those strategies.

5.5.1 Archaeological Resources

Treatment strategies to protect archaeological resources on the installation include the following:

- For non-historic structures, activities involving previously disturbed areas within five feet of exterior walls or removal of basement debris within the footprint of a structure do not require further consideration or documentation for archaeological resources.
- Vegetation management activities should follow the procedures outlined in the Integrated Natural Resources Management Plan. It is important to note that some plant species that are currently listed as invasive species were used historically in domestic gardening, and that occurrences of these species can often be associated with known archaeological sites, or be predictive of unrecorded sites.
- Ground disturbing activities associated with building maintenance, natural resource management, and military training activities located within areas identified in Appendix O as having been comprehensively surveyed for archaeological resources and containing no identified sites may proceed without further review.
- Ground disturbing activities associated with building maintenance, natural resource management, and military training activities located within areas identified in Appendix O as having been surveyed for archaeological resources and containing identified sites or as not having been surveyed for archaeological resources shall be coordinated with the VASHPO in accordance with the provisions of 36 CFR Part 800.
- Trenching associated with utility installation in areas where there are no previously recorded archaeological sites as identified in Appendix P shall be monitored by an archaeologist who meets the *Secretary of the Interior's Professional Qualification Standards* and does not need to be coordinated with the VASHPO. Monitoring shall include, but not be limited to recording and reporting of major features or artifact concentrations uncovered, a representative profile drawing of trench stratigraphy, and recovery/curation of a sample of the remains uncovered, where practicable. Trenching

associated with utility installation in areas of known archaeological sites will be coordinated with theVASHPO.

- In the event that previously unidentified archaeological resources are encountered during construction, work will cease in the immediate area of the discovery and in any adjacent areas where additional resources may be expected and the CRM notified immediately. Guidelines in SOP 16 will be followed. All other project activities not in the area of the discovery may proceed without interruption.

5.5.2 Architectural Resources

Treatment strategies to protect architectural resources on the installation include the following:

5.5.2.1 New construction and additions

New construction within or immediately adjacent to historic districts or individual historic properties will be designed to adhere to the Secretary's Standards and be similar to the overall character of the historic property in terms of height, scale, massing, set-backs, color, materials, and detailing. Additions to historic buildings or contributing buildings within historic districts shall adhere to the Secretary's Standards and be consistent with guidelines in National Park Service Preservation Brief #14, "New Exterior Additions to Historic Buildings: Preservation Concerns." Plans for any new construction or additions will be reviewed by both the CRM and the VASHPO before any construction occurs.

5.5.2.2 Rehabilitation Activities

Rehabilitation of historic or contributing properties will be done in accordance with the recommended approaches in the Secretary's Standards. Approaches include:

- Pre-project documentation including work write-ups, bid documents, architectural plans, and photographs, will be prepared by Fort A.P. Hill staff with responsibility for the project, and in consultation with the CRM, or with other qualified consultants, as appropriate.
- The CRM shall review the rehabilitation plans and issue a Letter of Approval verifying that the project will have no effect or no adverse effect, by virtue of meeting the Secretary's Standards. Work may not begin until the CRM has issued a Letter of Approval. All work will conform to the approved proposal and to the conditions stated in the Letter of Approval. Rehabilitation accomplished in this manner will have no adverse effect on historic properties and no further compliance with the ACHP or VASHPO's procedures will be necessary.

If the Standards cannot be met, or the proposed treatment of the property is not rehabilitation, or if the contemplated action could have an adverse effect on properties listed or eligible for listing in the National Register, then, prior to taking any action, Fort A.P. Hill will consult with the VASHPO and initiate the procedures set forth at 36 CFR Part 800.

5.5.2.3 Emergency demolition

In the event Fort A.P. Hill determines that emergency demolition of a historic property or contributing property within a historic district is required to avoid an imminent threat to the health and safety of human life, then Fort A.P. Hill shall hand-deliver documentation to the VASHPO with a request for comments within five (5) business days. The documentation will include:

- A copy of the order requiring emergency demolitions, and
- Photographs of the property or other documentation regarding the property's eligibility for the National Register.

The VASHPO will notify Fort A.P. Hill in writing of its concurrence and any required mitigation measures. If the VASHPO objects to the demolition, Fort A.P. Hill will comply with the ACHP's regulations in 36 CFR Part 800.12 regarding emergency undertakings.

5.5.3 Monitoring and Reporting

Fort A.P. Hill will retain project records for a minimum of three (3) years following the completion of a project. The project files will include staff reviews, comments from the VASHPO, work write-ups, and before and after photographs.

Fort A.P. Hill will submit an annual report to the VASHPO each October summarizing cultural resources activities. The report will include the following information:

- A list of properties for which work write-ups have been reviewed by the CRM, and
- Photographic documentation and sample projects demonstrating that the Secretary's Standards have been met.

Upon written request by the VASHPO, Fort A.P. Hill will make arrangements for the VASHPO to review records and conduct on-site inspections of projects.

5.6 Negotiation of a Programmatic Agreement

A Programmatic Agreement (PA) is an agreement, executed pursuant to the Section 106 regulations (36 CFR Part 800), that prescribes a process that substitutes for the standard Section 106 review process. A PA can be used by Fort A.P. Hill to substitute agreed-upon alternative procedures for review of installation activities.

A PA for activities associated with BRAC actions was executed in consultation with the ACHP, VASHPO, Archeological Society of Virginia, Civil War Preservation Trust, National Park Service, Council of Virginia Archaeologists, Virginia Council on Indians, and the Rappahannock Tribe (Appendix D). This PA defines how potential adverse effects to historic properties will be mitigated. A general PA for routine operations, maintenance, and development at the installation is also being developed.

6.0 STANDARD OPERATING PROCEDURES

Standard Operating Procedures (SOPs) provide guidance for complying with major cultural resources laws and regulations summarized in Section 2 of the ICRMP. SOPs also identify how Fort A.P. Hill will address the cultural resources issues related to proposed or planned installation construction, operations, and training activities. SOPs are provided for major installation activities including military operations and training, timbering, wildlife management, soil and erosion control, hazardous waste management, and accidental discovery of cultural resources.

6.1 SOP 1: SECTION 106 COMPLIANCE

Under Section 106, the Garrison Commander is ultimately responsible for all decisions and actions affecting cultural resources on Fort A.P. Hill. The DPW and the DPTMS oversee Fort A.P. Hill's primary mission activities and thus have the greatest potential to propose and implement undertakings that may affect significant cultural resources. The DPW has oversight authority for Fort A.P. Hill's compliance with Federal historic preservation laws. Within the ENRD, the CRM is responsible for coordinating specific projects in accordance with the provisions of applicable Federal historic preservation legislation.

All actions that have the potential to affect historic property, whether such property has been formerly identified or not, must be coordinated with the VDHR, and the ACHP as necessary, in accordance with the provisions of 36 CFR Part 800, the regulations implementing Section 106 of the NHPA. In order to ensure that installation actions are in compliance with Federal laws and regulations prior to implementation, it is essential that consideration of historic properties take place early in the project planning phase.

6.1.1 Internal Coordination Process

Projects submitted to DPW by installation personnel are reviewed and scopes of work and cost estimates are prepared either by Engineering Division or the Business Operations/Integration Division (BOID). The CRM is then notified of the project and begins coordinating the project in accordance with applicable Federal historic preservation laws and regulations.

6.1.1.1 Determine if Proposed Action is an Undertaking

The CRM determines whether or not the proposed action is an *undertaking* for the purposes of compliance with Section 106. Section 106 **only** applies to undertakings. The NHPA defines an undertaking as any project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including - a) those carried out by or on behalf of any agency; b) those carried out with Federal financial assistance; c) those requiring a Federal permit, license, or approval; and d) those subject to state or local regulation administered pursuant to a delegation or approval by a Federal agency.

Undertakings include both new and continuing projects, activities, and programs, and any of their elements that have not been previously reviewed under Section 106. To be an undertaking, a project or program must have the potential to affect historic properties regardless of whether any historic properties are known to be present.

Examples of activities or actions that could be undertaking**s** include:

- Changing a building, structure, or landscape in any way;
- Disturbing the ground;
- Altering noise levels in an area, or changing the area's visual characteristics; or
- Changing traffic patterns, land use, or the socioeconomic character of an area.

Fort A.P. Hill undertakings include, but are not limited to, new construction projects, military training exercises, maintenance and rehabilitation of buildings or structures, silivicultural activities, vegetation management, and excessing or leasing of DoD real property.

If the proposed activity is an undertaking for the purposes of review under Section 106, the CRM initiates review and coordination of the project under Section 106. If not, the CRM documents the determination and notifies DPW and BOID that the project may proceed.

6.1.1.2 Define the Area of Potential Effect (APE) for the Proposed Undertaking

The APE is defined as the area that may be affected by the undertaking. It may be larger than the project footprint, since it includes all area where effects on historic properties, such as visual effects, are possible. The APE may include areas outside of Fort A.P. Hill.

Determination of the APE is made regardless of whether or not historic properties are known to be present. The APE is simply the area or areas where effects on historic properties **may** occur as Fort A.P. Hill proceeds with the undertaking. If the proposed action is an undertaking for the purposes of Section 106, then the CRM defines and documents the APE on installation maps, as appropriate relative to the scale of the proposed undertaking. This will define the area where historic property concerns need to be addressed.

6.1.1.3 Identify and Evaluate Historic Properties

Fort A.P. Hill is required to make a reasonable and good faith effort to identify historic properties within the proposed project's APE. The CRM reviews installation historic property maps (Appendices O, P, and Q) to determine whether the APE has been previously surveyed or contains or has the potential to contain previously identified historic properties.

The following basic steps should be followed when identifying historic property:

Review available information. Consult installation maps with data on all previously identified historic properties, areas surveyed, and map predicted sites. The views of other parties, such as local governments, Indian tribes, and local community groups (such as historical societies), should also be solicited regarding the presence of historic properties in the APE.

Determine information gaps. Conduct background research on the APE's history, prehistory, geomorphology, archaeology, and architectural history.

Identify historic properties. After determining what information exists and what additional efforts need to be used to identify historic property, actual identification may begin. Identification may involve:

- Field surveys to locate and describe archaeological sites, historic buildings, structures, historic landscapes, and other visually identifiable types of properties;
- Interviewing concerned parties such as Indian tribes and their traditional leaders, local governments, and adjacent property owners;
- Historical research;

- Geomorphological studies; and
- Other studies relevant to the kinds of historic properties that may be present in the APE and the nature of the proposed undertaking.

If the APE has been previously surveyed and no historic properties are present or predicted, then the CRM documents the finding in accordance with the guidance provided in Section 6.2.3 of the ICRMP and coordinates with the VDHR.

Once concurrence is received from the VDHR, the CRM notifies DPW and/or BOID that coordination has been completed for historic properties.

If the APE for the proposed action has not been surveyed or previously identified historic properties are present, the CRM reviews previous survey data, conducts an assessment of the APE, and seeks the opinion of the VDHR regarding additional identification efforts.

If the CRM determines that historic property surveys are necessary, then Phase I identification surveys are implemented as appropriate.

6.1.1.4 Assess Adverse Effects

Fort A.P. Hill determines the effect of a proposed undertaking on historic property by applying the criteria of adverse effect in consultation with the VDHR and others (e.g., Indian tribes, local governments, etc.) who have expressed interest in the project.

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics that qualify a historic property for listing in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Fort A.P. Hill should consider reasonable foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Examples of adverse effects include:

- Physical destruction of, or damage to, all or part of a property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicap access that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68);
- Removal of the property from its historic location;
- Change in the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration; or

- Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's significant historic features [36 CFR Part 800.5(a)(2)].

If Fort A.P. Hill, in consultation with the VDHR, determines that the undertaking does not meet the criteria of adverse effect or the undertaking is modified or conditions are imposed or agreed upon that ensure that the project is carried out in accordance with the *Secretary of the Interior's Standards* then the CRM may propose a finding of no adverse effect.

If Fort A.P. Hill proposes a finding of no adverse effect, then the VDHR and parties who have expressed an interest in the undertaking and participated in earlier consultation should be notified and provided the documentation outlined in Section 6.3.2.

6.1.1.5 Determine National Register Status

If historic properties are present that cannot be avoided, then the CRM must determine the National Register status of the property in consultation with the VDHR in accordance with guidance provided in Section 6.1.1.6 of the ICRMP. National Register status is provided in Appendices K and L for all currently identified historic properties at Fort A.P. Hill.

6.1.1.6 Determine Eligibility for National Register Status

If, in consultation with the VDHR, the CRM determines that there are properties within the APE that are eligible for listing in the National Register, then effects to historic properties are evaluated in consultation with the VDHR and other interested parties in accordance with the guidance provided in Section 6.1.2.

In assessing effects, the CRM should consult with DPW, BOID, and the Fort A.P. Hill Master Planner to determine if there are options for reducing or avoiding adverse effects through project design changes. If adverse effects can be avoided, then the CRM should document the actions to be taken to minimize or avoid adverse effects and coordinate with the VDHR in accordance with the guidance provided in Section 6 of the ICRMP. Once concurrence is received from the VDHR, the CRM notifies the DPW and/or BOID and provides any conditions agreed upon with VDHR to avoid, minimize, or mitigate adverse effects to significant historic property.

6.1.1.7 Begin Consultation Process as Necessary

If adverse effects cannot be avoided, then the CRM initiates consultation with the VDHR in accordance with the guidance provided in 6.3 SOP 3 of the ICRMP.

6.1.2 External Coordination Process

6.1.2.1 Notifying the Virginia State Historic Preservation Officer

The ACHP regulations (36 CFR Part 800) outline the process that Fort A.P. Hill must follow to take into account the effects of its undertakings on properties listed or eligible for listing in the National Register. The first step is to contact and consult with the VASHPO. In the Commonwealth of Virginia, the VASHPO is agency head of the VDHR. Unless otherwise noted, the VDHR must respond to all requests for comment, pursuant to the regulations, within

30 days of receipt of adequate documentation. If the VDHR fails to respond to Fort A.P. Hill within 30 days of receipt of an adequately documented request, then Fort A.P. Hill may assume concurrence from the VDHR and proceed with the next steps in the process as appropriate. If Fort A.P. Hill determines, in consultation with the VDHR, that the proposed undertaking will have an adverse effect, or the ACHP objects to the installation's effect determination, then consultation with the VDHR, the ACHP, if participating, and others must take place to resolve adverse effects.

6.1.2.2 Notifying the Advisory Council

After Fort A.P. Hill and the VDHR determine that the proposed undertaking will have an adverse effect, Fort A.P. Hill should then notify the ACHP of the adverse effect finding and provide the documentation outlined in 6.3.2 of SOP 3. The purpose of this notification is to provide the ACHP with an opportunity to participate in the consultation process to resolve adverse effects, should they feel it is appropriate. The ACHP will notify Fort A.P. Hill within 15 days of receipt of an adequately documented request if it intends to participate in consultation to resolve adverse effects.

Fort A.P. Hill must invite the ACHP to participate in consultation when:

- Fort A.P. Hill wants the ACHP to participate in consultation,
- The undertaking has an adverse effect on a National Historic Landmark, or
- A Programmatic Agreement is being proposed.

If a project is signed-off on and implemented without complying with Section 106, then Fort A.P. Hill may have foreclosed the ACHP's opportunity to comment on the project. A foreclosure finding by the ACHP means that, in the ACHP's opinion, Fort A.P. Hill has failed to comply with Section 106 and is therefore in violation of Federal law. A foreclosure finding will place Fort A.P. Hill's Garrison Commander in a vulnerable position to citizen lawsuits.

6.1.2.3 Resolving Adverse Effects

Section 106 requires that Fort A.P. Hill consider effects on all kinds of cultural resources listed in or eligible for listing in the National Register, including buildings, sites, and districts made up of multiple properties, objects, structures, landscapes, and traditional cultural properties and to consult with the VASHPO and provide the ACHP with an opportunity to comment.

Resolving adverse effects may involve whatever Fort A.P. Hill, VDHR, ACHP (if participating), and the other consulting parties agree is appropriate. Resolution may be achieved by:

- Eliminating the adverse effect through redesign or relocation of the project;
- Reducing the adverse effect's severity through redesign of the project;
- Mitigating the adverse effect through documentation, data recovery, or other agreed upon means; or
- Accepting the adverse effect in the public interest.

During consultation to resolve adverse effects, Fort A.P. Hill must consider cost factors and mission requirements when making decisions regarding mitigation. The NHPA does not require that Fort A.P. Hill preserve all historic properties, only that historic properties are properly considered in the project planning process and that decisions be made in the public interest in accordance with the regulations (36 CFR Part 800). Please see 6.4 SOP 4 for additional mitigation procedures.

6.1.3 Things to Remember When Complying with Section 106

- Fort A.P. Hill must consider effects not only on properties already included in the National Register, but also on eligible properties. Fort A.P. Hill is responsible for ensuring that eligible properties are identified, evaluated, and considered.
- To allow maximum public participation in the identification of APEs and historic properties, potential consulting parties should be identified early in the review process.
- Determine eligibility for the National Register solely on the historical, architectural, or cultural significance of a property. Management, mission, and treatment requirements should not be considered when evaluating properties.
- Cost factors and mission requirements must be considered when negotiating management/treatment plans for historic properties with the VDHR, ACHP, and others. The law does not require that all historic properties be preserved in place, but each historic property must be considered according to the ACHP's regulations and managed in the public interest.
- Fort A.P. Hill will be at greatest risk if it fails to follow the steps required by the regulations, and if it fails to consult properly with the VDHR, ACHP, and other interested parties, such as Indian tribes and other concerned parties.
- Section 106 compliance early in the planning stages of an undertaking maximizes the preservation alternatives available to Fort A.P. Hill.
- NHPA provides authority (under Section 110[g]of the Act), but no appropriation, to fund planning, management, and preservation of historic properties. Fort A.P. Hill must meet compliance needs through its normal planning, programming, budgeting, and execution processes.

6.2 SOP 2: EVALUATION FOR THE NATIONAL REGISTER

Section 106 only applies to those properties listed or eligible for listing in the National Register. If a property is identified that has not yet been evaluated for listing in the National Register, then Fort A.P. Hill must initiate the evaluation process in consultation with the VDHR, by applying the National Register Criteria (36 CFR Part 60.4).

6.2.1 National Register Criteria

A property is eligible for the National Register if it meets one or more of the following criteria:

"The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

b) That are associated with the lives of persons significant in our past; or

c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) That have yielded, or may be likely to yield, information important in prehistory or history." [36 CFR Part 60.4].

Besides meeting one or more of the above National Register criteria, a property must also have integrity of location, materials, design, setting, workmanship, feeling, and association. If a property has been seriously compromised by unsympathetic alterations or severe ground disturbance, it may not be eligible for the National Register.

Historic properties are not always old buildings, archaeological sites, and old structures (such as bridges). Linear features like roads, trails, and waterways can also be considered historic properties. In addition, designed landscapes like parks and parkways and expansive rural landscapes may also be considered historic properties.

To evaluate a potential historic property, Fort A.P. Hill should apply each of the National Register criteria to the property and determine if the property is eligible under one or more of the criteria. This determination should be submitted to the VDHR for concurrence or further consultation.

6.2.2 Property That Does Not Meet National Register Criteria

If Fort A.P. Hill, in consultation with the VDHR, determines that there are no properties in the APE that meet the criteria for listing in the National Register, then the VDHR and any other groups or organizations (e.g., Indian tribes, local governments, etc.) who have expressed an interest in the project should be notified and provided with supporting documentation outlined in Section 6.2.3. Fort A.P. Hill should make the documentation available for public inspection prior to approval of the undertaking. If the VDHR does not object within 30 days of receipt of complete documentation, then Fort A.P. Hill may proceed with the undertaking.

6.2.3 Finding of No Historic Properties Affected Documentation

If Fort A.P. Hill proposes a finding of no historic properties affected, then the VDHR and parties who have expressed an interest in the undertaking and participated in earlier consultation should be notified and provided the documentation outlined below.

- A description of the undertaking, specifying the Federal involvement, and its APE including photographs, maps, and drawings, as necessary.
- A description of the steps taken to identify historic properties, including, as appropriate, any previous surveys conducted and efforts to seek information pursuant to 36 CFR Part 800.4(b).
- The basis for determining that no historic properties are present or affected.

6.2.4 VDHR Non-Concurrence

If Fort A.P. Hill and the VDHR do not agree on the eligibility of a property, or the ACHP or the Secretary of the Interior so request, then Fort A.P. Hill shall request a formal determination of eligibility from the Secretary of the Interior in accordance with 36 CFR Part 63.

6.3 SOP 3: ASSESSING EFFECTS ON HISTORIC PROPERTIES

6.3.1 No Adverse Effect/No Effect Documentation Requirements

If Fort A.P. Hill proposes a finding of no adverse effect, then the VDHR and parties who have expressed an interest in the undertaking and participated in earlier consultation should be notified and provided the documentation outlined below.

- A description of the undertaking specifying the Federal involvement and the area of potential effect, including photographs, maps, and drawings as necessary.
- A description of the steps taken to identify historic properties.
- A description of the affected historic properties, including information on the characteristics that qualify them for listing in the National Register.
- A description of the undertaking's effects on historic properties.
- An explanation of why the criteria of adverse effect were found applicable or inapplicable, including any conditions or future actions to avoid, minimize, or mitigate adverse effects.
- Copies or summaries of any views provided by consulting parties and the public.

6.3.2 Advisory Council Notification of Adverse Effect Documentation

If Fort A.P. Hill, in consultation with the VDHR, determines that there are properties in the APE that meet the criteria for listing in the National Register and that may be affected by the proposed undertaking, then Fort A.P. Hill must apply the criteria of adverse effect.

- A description of the undertaking specifying the Federal involvement and the APE, including photographs, maps and drawings as necessary.
- A description of the steps taken to identify historic properties.
- A description of the affected historic properties, including information on the characteristics that qualify them for listing in the National Register.
- A description of the undertaking's effects on historic properties.
- An explanation of why the criteria of adverse effect were found applicable or inapplicable, including any conditions or future actions to avoid, minimize, or mitigate adverse effects.
- Copies or summaries of any views provided by consulting parties and the public.

6.4 SOP 4: MITIGATION THROUGH DATA RECOVERY

6.4.1 Site Criteria

If Fort A.P. Hill determines that a proposed undertaking will have an adverse effect on a significant archaeological or historical site and the effects cannot be avoided, then the ACHP recommends that the following issues be considered and addressed when data recovery is being proposed:

- The archaeological or historical site should be significant and of value chiefly for the information on prehistory or history it is likely to yield through archaeological, historical, and scientific methods of information recovery, including archaeological excavation.
- Any archaeological site should not contain or be likely to contain human remains, associated or unassociated funerary objects, sacred objects, or items of cultural patrimony as those terms are defined by the NAGPRA (25 U.S.C. 3001).
- Any archaeological site should not have long-term preservation value, such as traditional cultural and religious importance to an Indian tribe or a Native Hawaiian organization.
- Any archaeological site should not possess special significance to another ethnic group or community that historically ascribes cultural symbolic value to the site and would object to the site's excavation and removal of its contents.
- The archaeological or historic site should not be valuable for potential permanent in-situ display or public interpretation, although temporary public display and interpretation during the course of any excavations may be highly appropriate.

6.4.2 Data Recovery Plan

The CRM should prepare a data recovery plan, in consultation with the VASHPO/THPO and other stakeholders, as appropriate, with a research design that is consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*, the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation*, and the *Advisory Council on Historic Preservation's Treatment of Archaeological Properties: A Handbook*. The plan should specify:

- The results of previous research relevant to the project;
- Research problems or questions to be addressed with an explanation of their relevance and importance;
- The field and laboratory analysis methods to be used with a justification of their cost-effectiveness and how they apply to this particular property and these research needs;
- The methods to be used in artifact, data, and other records management;
- Explicit provisions for disseminating the research findings to professional peers in a timely manner;

- Arrangements for presenting what has been found and learned to the public, focusing particularly on the community or communities that may have interests in the results;
- The curation of recovered materials and records resulting from the data recovery in accordance with 36 CFR Part 79 (except in the case of unexpected discoveries that may need to be considered for repatriation pursuant to NAGPRA); and
- Procedures for evaluating and treating discoveries of unexpected remains or newly identified historic properties during the course of the project, including necessary consultation with other parties.

The CRM should ensure that:

- The data recovery plan is developed and will be implemented by or under the direct supervision of a person, or persons, meeting at a minimum the *Secretary of the Interior's Professional Qualifications Standards* (48 FR 44738-44739).
- There are no unresolved issues concerning the recovery of significant information with any Indian tribe that may attach religious and cultural significance to the affected property.
- Large, unusual, or complex projects should include provisions for special oversight, including professional peer review.
- The data recovery will produce a final archaeological report that meets the appropriate professional standards and the *Secretary of the Interior's Standards and Guidance for Archaeology and Historic Preservation* (42 FR 5377-79), and the report will be provided to the VASHPO/THPO and other concerned parties.
- The terms and conditions of the recommended approach are incorporated into a Memorandum of Agreement (MOA) or PA. A copy of the agreement must be filed with the ACHP per 36 CFR Part 800.6(b) (iv) before the agreed upon plan can be implemented. The agency should retain a copy of the agreement and supporting documentation in the project files.
- Adequate time and money to carry out all aspects of the plan are provided, and all parties consulted in the development of the plan are kept informed of the status of the plan's implementation.

By properly addressing the above issues when proposing to resolve adverse effects to historic properties through data recovery, it is unlikely that the ACHP will either enter the consultation process or raise an objection to the proposed action.

6.5 SOP 5: DEMOLITION OF ARCHITECTURAL RESOURCES

Fort A.P. Hill, in fulfillment of its affirmative responsibility under the NHPA, and its implementing regulations, to give priority to the reuse of historic properties to carry out its mission, will actively seek alternative uses for buildings and structures early in the planning process.

Prior to reaching a final decision regarding demolition of architectural resources listed or eligible for listing in the National Register, Fort. A.P. Hill will conduct an alternatives analysis for the proposed structure or structures. The alternatives analysis will fully examine and document all viable alternatives to demolition including, but not limited to, rehabilitation for adaptive reuse, placing the building(s) or structure(s) in caretaker status, and locating new or replacement facilities to avoid demolition.

For all buildings and structures where demolition is the preferred alternative, Fort A.P. Hill will provide a written copy of the alternatives analysis to the VDHR and the ACHP if they are participating in consultation, along with the following documentation:

- Detailed discussion of alternatives considered;
- Detailed analysis and discussion of mission, technology, and facility utilization requirements;
- Detailed condition assessments with emphasis on the character defining features of the historic property; and
- Detailed cost analysis for rehabilitation and reuse versus mothballing or demolition.

Fort A.P. Hill will submit the alternatives analysis to the VDHR, and the ACHP if participating in consultation, as part of the required documentation for consultation to resolve adverse effects. Please see Section 7 for a complete discussion of economic analysis.

6.6 SOP 6: DEVELOPING A MEMORANDUM OF AGREEMENT

6.6.1 Situations Requiring a Memorandum of Agreement

Once Fort A.P. Hill, the VDHR, the ACHP, if participating, and other consulting parties have reached an agreement about how adverse effects will be resolved, the terms of this agreement are recorded in a Memorandum of Agreement (MOA). The MOA is a legal document that spells out the measures agreed upon by the consulting parties, identifies who is responsible for carrying them out, and provides documentary evidence that Fort A.P. Hill has met the requirements of Section 106. The basic format of a MOA is outlined in Figure 2.

6.6.2 Documentation Requirements when Requesting ACHP Comments

When Fort A.P. Hill and the VDHR sign an MOA and the ACHP is not participating in the consultation process, then Fort A.P. Hill must submit the MOA with the documentation shown below to the ACHP prior to proceeding with the undertaking. Once the executed MOA and the supporting documentation have been filed with the ACHP, then Fort A.P. Hill has met its requirements under Section 106 and may proceed with the undertaking.

- A description and evaluation of any alternatives or mitigation measures that the Agency Official proposes to resolve the undertaking's adverse effects.
- A description of any reasonable alternatives or mitigation measures that were considered but not chosen, and the reasons for their rejection.
- Copies or summaries of any views submitted to the Agency Official concerning the adverse effects of the undertaking on historic properties and alternatives to reduce or avoid those effects.
- Any substantive revisions or additions to the documentation provided the ACHP pursuant to 36 CFR Part 800.6(a).

If Fort A.P. Hill and the VDHR fail to agree on the terms of a MOA, then Fort A.P. Hill should request the ACHP to participate in consultation and provide them with the same documentation listed above.

6.6.2 Format of a Memorandum of Agreement

Under Section 106, a MOA documents the results of consultation and establishes a legally binding course of action that the Federal agency will follow to implement the agreed upon actions. The basic format of a MOA includes whereas clauses that provide background information about the consultation process (e.g., what is the undertaking, who consulted, etc.) and stipulations that state what actions must be performed by each of the parties to the agreement (see Figure 2). A good MOA fully documents the intent and requirements of the agreement by providing detailed answers to the basic questions of what, why, who, where, when, and how. The Army Environmental Command (website: aec.army.mil/usaec/) maintains a database of agreement documents that can be used as examples or templates.

MEMORANDUM OF AGREEMENT

AMONG *NAME OF AGENCY, [NAME OF STATE]* STATE HISTORIC PRESERVATION OFFICER, AND ADVISORY COUNCIL ON HISTORIC PRESERVATION

WHERAS, the *[name of agency]* has determined that *[name of undertaking]* will have an effect upon *[name of property or properties]*, which *[has/have]* been determined *[eligibility for the National Register of Historic Places]*, and has consulted with the *[name of State]* State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (Council) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f*); [and Section 110(f) of the same Act (16 U.S.C. 470h-2(f)]* and

WHEREAS, *[names of other consulting parties, if any]* participated in the consultation and *[names of invited parties, if any]* [has/have] been invited to concur in the Memorandum of Agreement; and

WHEREAS, the definitions given in *[Appendix]* are applicable throughout this Memorandum of Agreement.

NOW, THEREFORE, *[name of agency]*, the *[name of State]* SHPO, and the Council agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

Stipulations

[Name of agency] will ensure that the following measures are carried out:

[Insert stipulations here.]

Execution of this Memorandum of Agreement and implementation of its term evidence that *[name of agency]* has afforded the Council an opportunity to comment on the *[name of undertaking]* and its effects on historic properties, and that *[name of agency]* has taken into account the effects of the undertaking on historic properties.

[NAME OF AGENCY]
[Name and title of signer]

[NAME OF STATE] STATE HISTORIC PRESERVATION OFFICER
[Name and title of signer]

ADVISORY COUNCIL ON HISTORIC PRESERVATION
[Name and title of signer]

[NAME(S) OF CONCURRING PARTY/PARTIES]
[Name and title of signer]

Figure 2: Simplified Memorandum of Agreement Format.

6.7 SOP 7: EMERGENCY PROCEDURES

Section 106 regulations (36 CFR Part 800.12) encourage Federal agencies to develop procedures to address historic properties that may be affected when disasters or emergencies require timely response to protect life or property. Under 36 CFR Part 800.12(d) immediate emergency operations that are conducted to preserve life or property are exempt from Section 106. Emergency procedures for non-exempt operations should be developed through consultation among Fort A.P. Hill, the VASHPO, the ACHP, and other interested parties. In the absence of such procedures, Fort A.P. Hill shall implement applicable SOPs for unexpected discoveries, especially SOP 16 (Unexpected Discovery of Archaeological Resources) and SOP 17 (Discovery of Human Remains) until other procedures are negotiated.

If emergency procedures have not been developed under 36 CFR Part 800.12, Fort A.P. Hill has three options for addressing non-exempt emergency operations:

- Suspend work that threatens historic properties and carry out the standard process of Section 106 review. **Or,**
- Comply with the Archaeological and Historic Preservation Act of 1974 in lieu of compliance with the Section 106 regulations. This includes notifying the National Park Service (NPS) of the work to be conducted at the historic property and carrying out any needed archaeological data recovery or assisting the NPS in doing so. **Or,**
- Notify the ACHP and the VASHPO that emergency operations may affect historic properties and request that the ACHP and VASHPO provide comments on the proposed operations within seven days of notification (or sooner if the severity of the emergency so warrants). All operations must be implemented within 30 days after the disaster or emergency has been officially declared. If operations are expected to begin after 30 days, Fort A.P. Hill must request an extension from the ACHP prior to the 30th day after the declaration.

6.8 SOP 8: COORDINATING SECTION 106 WITH THE NEPA

Fort A.P. Hill is required to comply with both the NEPA and the NHPA as separate statutes.

However, both the President's Council on Environmental Quality (CEQ) (under the NEPA) and the ACHP (under the NHPA) support the integration of NEPA and Section 106 into one process when appropriate, and in March 2013 published a joint document toward that end, *entitled NEPA and NHPA: A Handbook for Integrating NEPA and Section 106*. This integration of Section 106 into the NEPA process is authorized under the implementing regulations for Section 106, and can involve either the coordination of NEPA and Section 106 review processes or the substitution of a 36 CFR Part 800.8 compliant NEPA process for standard Section 106 review (36 CFR Parts 800.3 to 800.6).

The decision to integrate Section 106 and NEPA reviews should be based on the complexity of a project and the corresponding levels of Federal agency control required for each process. The CEQ and ACHP recommend that agencies should ask the following questions when considering substitution, and that positive answers suggest substitution may be appropriate:

- "Will the Federal agency be actively involved in the development of the NEPA document (as opposed to an applicant, project sponsor, or contractor) and therefore be able to ensure its consultation responsibilities are being met?
- Are the agency delegations of authority and staff and other resources well positioned to support the substitution process?
- Will a single participation process enhance public engagement?
- Will substitution enhance the opportunity to resolve adverse effects because resource conflicts are related, or will it complicate other analyses?"

6.8.1 Section 106 and Categorical Exclusions (CE)

The existence of a CE under the NEPA does not eliminate the need for Section 106 review of an undertaking. If Section 106 consultation determines that no historic properties will be affected, the NEPA process may proceed with the CE. If historic properties will be affected (whether adversely or not), the NEPA process must consider whether "extraordinary circumstances" warrant the completion of an environmental assessment (EA) or environmental impact statement (EIS). Depending on the effects to historic properties and the proposed avoidance or mitigation of those effects, the NEPA process may be concluded with a CE after successful resolution of the Section 106 review.

6.8.2 Section 106 and Environmental Assessments (EA)

Although the potential for adverse affects to historic properties may determine whether the NEPA process proceeds through an EA, the level of NEPA documentation does not necessarily correlate to the level of Section 106 consultation required. Section 106 review is intended to identify and resolve adverse effects to historic properties. When the Section 106 review is completed prior to the NEPA decision, the planned mitigation of adverse effects to historic

properties can be incorporated into the EA process and included in the justification for a finding of no significant impacts (FONSI). On the other hand, the failure to complete Section 106 review, or to resolve adverse effects to historic properties, may result in the need to prepare an EIS.

6.8.3 Section 106 and Environmental Impact Statements (EIS)

As with an EA, the potential for adverse effects to historic properties may drive the need for a NEPA EIS, but, again the level of Section 106 consultation does not necessarily increase along with the level of NEPA documentation. It was previously mentioned that the NEPA process can be concluded with an EA and FONSI even when there will be adverse effects to historic properties, as long as the adverse effects have been resolved through Section 106 review prior to the completion of the FONSI. Consequently, if cultural resource issues are the driving force in the decision to proceed with an EIS, it is highly likely that adverse effects to historic properties either (1) have not been resolved through Section 106 review, or (2) are of such significance to warrant further study beyond that covered under Section 106.

The lack of Section 106 resolution prior to the completion of the EA process is the most likely cultural resources trigger that would result in the need for an EIS. This could be by design: to meet deadlines for the EA, or to allow more focused attention on cultural resource issues. But it could also be the result of poor coordination between the NEPA and Section 106 processes.

Whatever the reason may be, the primary cultural resources concern when an EIS is being prepared is that the Section 106 review must be resolved prior to the completion of the EIS process and that the associated record of decision (ROD) must include the requirements identified in any agreements developed in the Section 106 consultation.

In the event that the Army needs to expedite a ROD prior to the formal conclusion of the Section 106 process, it is imperative that Fort A.P. Hill seek appropriate legal advice and consult with the ACHP and VASHPO to determine if and how requirements for continued Section 106 consultation can be acceptably included in the ROD.

6.9 SOP 9: COMPLIANCE WITH NAGPRA

NAGPRA sets forth a process for the return to American Indians, Native Hawaiians, and Native Alaskans, upon request, certain human remains and other items, such as funerary or religious objects, presently held by Federal agencies or federally assisted museums or institutions. NAGPRA also gives Native American individuals and groups a formal role in the decision making process for activities carried out on Federal and tribal lands that may affect archaeological resources of importance to Native Americans.

6.9.1 Relationship of NAGPRA to Section 106

NAGPRA relates to and in turn will affect the Section 106 process in three primary ways.

- **Archaeological Investigations—**Fort A.P. Hill and non-Federal users of Fort A.P. Hill lands must formally consult with the appropriate Native American groups regarding the treatment and disposition of human remains and other cultural items recovered during archaeological investigations conducted on Fort A.P. Hill lands. These Native American groups must consent to removal of remains on tribal lands.

  Excavation, by or on behalf of Fort A.P. Hill, of human remains and other cultural items from Fort A.P. Hill or tribal lands must meet the requirements of ARPA. Individuals conducting research independent of Fort A.P. Hill must receive an ARPA permit from the installation. In addition, evidence of consultation with the appropriate tribe regarding the treatment and disposition of any human remains and other cultural items that may be encountered is also required. Again, on tribal lands, the appropriate tribe must give its consent to the excavation and removal of materials. These requirements must be met even though a plan for data recovery or other investigations is developed through the Section 106 process.

- **Discovery Situations—**The inadvertent discovery of human remains and other cultural items during land-disturbing activity requires cessation of the activity. The person conducting the activity must take reasonable protection measures, notify the appropriate Fort A.P. Hill personnel who will in turn contact the relevant Indian tribe if on tribal land that the discovery has occurred, receive a formal acknowledgement of the notification (certification), and wait 30 days prior to resuming the activity. Disposition of the newly discovered remains or other cultural items must be resolved in accordance with the ownership provisions of NAGPRA.

- **Curation of Archaeological Remains—**In most cases, NAGPRA allows the affiliated Native American group to decide upon the appropriate treatment (analysis, curation, or reburial are three such treatments). Only those materials that are indispensable for completion of a specific scientific study, the outcome of which would be of major benefit to the United States, can be retained following a repatriation request for human remains and objects possessed or controlled by Fort A.P. Hill. Such remains, however, must be repatriated within 90 days of completion of the study if so requested.

6.9.2 Previous Research on Fort A.P. Hill under NAGPRA

The U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, conducted a study of the installation in 1995 to comply with NAGPRA. Since no human remains and/or funerary objects were identified as a result of archival and telephone interviews with repository personnel, no inventory is required and the installation is currently in compliance. Subsequent detailed studies of all post cultural resources investigations at the installation confirmed the absence of Native American human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony.

In the event that potential Native American human remains or items subject to NAGPRA are discovered during the course of conducting the installation's mission SOP 16 and SOP 17 should be followed.

6.9.3 Native American Tribes in Virginia

At present, there are no federally recognized Indian tribes in the Commonwealth of Virginia; however, there are 11 Indian tribes recognized by the Commonwealth. These tribes are the:

- Rappahannock,
- Mattaponi,
- Pamunkey,
- Chickahominy,
- Upper Mattaponi,
- Eastern Chickahominy,
- Monacan,
- Nansemond,
- Cheroenhaka,
- Nottoway of Virginia, and
- Patawomeck.

Decisions regarding disposition of Native American human remains and associated cultural items related to these tribes are typically reached as a result of discussions between the VDHR, the agency, and the relevant tribe.

6.10 SOP 10: COMPLIANCE WITH ARPA

Under ARPA, Federal land managers are responsible for issuing permits, or otherwise ensuring that the provisions of ARPA are met, prior to the initiation of archaeological investigations on Federal property or property under Federal control. DoD Policy Regulation 32 CFR Part 229 implements the provisions of ARPA and applies those provisions specifically to all properties under DoD jurisdiction.

6.10.1 Issuance of Permits

Fort A.P. Hill should only issue an ARPA permit for the excavation and removal of archaeological resources when the following conditions are met:

- The applicant is qualified to carry out the permitted activity per 36 CFR Part 229.8(a)(1);
- The activity is undertaken for the purpose of furthering archaeological knowledge in the public interest;
- The resources removed from public land will remain the property of the United States, and be preserved by a suitable institution; and
- The activity is not inconsistent with applicable management plans.

If an individual not associated with the DoD takes the initiative to undertake archaeological research on DoD land, issuance of a permit to that individual is not considered an undertaking subject to Section 106 review. If DoD initiates an excavation, the action becomes an undertaking subject to both Section 106 and ARPA.

Fort A.P. Hill is not required to formally issue ARPA permits for work conducted by or on behalf of the installation; however, the requirements of ARPA must be incorporated into any contract or other documentation authorizing conduct of the work.

6.10.2 Confidentiality

Information on the location and nature of archaeological resources on Fort A.P. Hill:

- Is exempt from the Freedom of Information Act;
- Need not be made available to the public under any other provision of law; and
- May not be made public unless Fort A.P. Hill determines that disclosure of the information would further the purposes of the ARPA and not create a risk to the resource.

Information regarding resource locations must however be provided to the Governor of Virginia with specific safeguards.

6.10.3 Fort A.P. Hill's Responsibilities Under ARPA

- Issuing and administering archaeological excavation permits to non-Fort A.P. Hill researchers.
- Monitoring the condition of archaeological resources.
- Ensuring cooperation between law enforcement and cultural resource personnel on Federal lands.
- Ensuring the consent of the Indian tribe owning or having jurisdiction over lands where ARPA permits have been requested and obtained.
- Setting forth the ARPA requirements for archaeological excavations.
- Initiating civil proceedings against violators.
- Rewarding people who furnish information that leads to a conviction under either civil or criminal ARPA sanction provisions.
- Participating in the development of their agency's ARPA regulations.
- Developing plans for archaeological surveys.
- Preparing a schedule for surveying those lands with the most scientifically valuable resources.
- Developing and implementing systems for reporting and recording archaeological violations.
- Developing and implementing public awareness programs.

6.11 SOP 11: MILITARY TRAINING EXERCISES

6.11.1 Environmental SOP for Training

The Environmental SOP is found in the Fort A.P. Hill Training Manual (APH MEMO 350-1) and the Fort A.P. Hill Range Regulations (APH REG 350-2). According to these publications:

- Relic hunting and the use of metal detectors are prohibited.
- Accidental discoveries of suspected artifacts must be reported immediately to both the ENRD and DPTMS.

The orientation briefing attended by all personnel within 24 hours of arrival on the installation should include mention of Fort A.P. Hill's stewardship of cultural resources.

6.11.2 Training Activities Which Place Cultural Resources at Risk

The U.S. Army identified five areas of unit operations for environmental risk assessment:

- Movement of heavy vehicles and systems
- Movement of personnel and light vehicle systems
- Assembly-area activities
- Field maintenance of equipment
- Garrison maintenance of equipment

At Fort A.P. Hill, the impacts of military training that affect cultural resources fall primarily in the second category listed above, as training is comprised predominately of small unit tactics involving personnel and light vehicles. These operations cause impacts consisting of the excavation of foxholes and other similar fighting positions, anti-tank ditches, latrines, and the movement of vehicular traffic.

6.11.3 Procedures and Guidance to Minimize Risk to Cultural Resources

Fort A.P. Hill has in place APH MEMO 350-1 which includes the aspects of training that are of potential concern. Activities discussed include:

- Demolition
- Engineering
- Equipment drops
- Excavation of foxholes and latrines
- Vehicular traffic

Of the above activities, equipment drops and vehicular traffic are not considered to have significant impacts to cultural resources since established drop zones are used and off-road

vehicular traffic is encouraged to use existing tank and jeep trails. Similarly, tracked vehicles are directed to cross streams on established bridges and culverts**,** and fording streams is prohibited.

To ensure that cultural resources are protected during military operations and training activities the following procedures should be followed:

- For demolition actions, overlays of proposed sites must be submitted in advance for written approval to the DPTMS.
- Proximity to historic structures and the effects of vibration shall be carefully reviewed for proposed demolition sites.
- Plans for the approximate size and location of ground-disturbing field engineering works such as bunkers, fighting positions, anti-tank ditches, emplacements, foxholes, and latrines must be submitted in advance for written approval to the DPTMS.
- No ground disturbing activity should occur within 100 feet of known archaeological sites without prior review by the ENRD.
- DPTMS shall coordinate with the DPW to prepare responses since DPW staff maintains "need to know" maps indicating the location of known and predicted archaeological sites and historic structures as well as detailed backup documentation.
- As indicated in APH MEMO 350-1, all disturbed areas shall be restored to their original state by the responsible unit before training area clearance is requested. This restoration must include all ground-disturbing activities cited above and must be done by hand. As a matter of policy, archaeological sites are off limits to all personnel and equipment. Under no circumstances, as pointed out in APH MEMO 350-1, is excavation for artifacts ("relic hunting"), or the use of metal detectors for this collecting, permitted.

Should artifacts or archaeological sites be inadvertently found during training exercises, these discoveries must be left in place, marked, and reported to the CRM for recording as soon as possible. This coordination must be indicated on the Training Clearance Checklist and ICRMP SOP 16 should be followed.

6.12 SOP 12: TIMBER HARVESTING AND PRESCRIBED BURNING

Forestry activities are considered undertakings that must be submitted to the VASHPO for concurrence on an individual basis. Additional guidance on such review is provided in SOP 19 – Conducting Cultural Resource Surveys in Association with Forestry Activities.

Cultural resource surveys for timber harvesting and prescribed burning activities focus on the potential impacts of each of these types of activities. Background research is conducted using Fort A.P. Hill's GIS database, which includes the locations of, and documentation for, previously recorded sites, as well as previous survey areas and potential map-projected resources. Most of Fort A.P. Hill was used as agricultural and silvacultural land prior to Army acquisition in the 1940s. These past land uses, and previous military training and silvacultural practices, have resulted in the existence of a plowzone (or Ap) soil horizon throughout much of the installation, and the previous burning (either through controlled burns or wildfires) of most training areas. For these reasons, forestry-related cultural resource surveys concentrate on the identification of (1) surficial cultural features/deposits throughout proposed forestry activity areas, and (2) subsurface cultural resources in areas that may be subjected to ground disturbance.

The survey and review process for forestry activities can be summarized as follows:

- Forestry Branch identifies proposed activities and delineates a project area.
- CRM identifies the area of potential effects for the project area and conducts appropriate cultural resource investigations.
- CRM prepares an Executive Summary that presents the potential effects of the proposed forestry activities on cultural resources. The Executive Summary is submitted by the CRM to the Forestry Branch for use in planning and to the VASHPO for review.
- After VASHPO comments are received, the CRM coordinates with the Forestry Branch to ensure these comments are considered in the proposed activity.
- Forestry Branch conducts the forestry activity as developed through consultation.
- On a semi-annual basis, the CRM compiles a detailed technical report that includes the results of forestry-related investigations conducted during the previous six months. The report is made available to the Forestry Branch through GIS and is submitted to the VASHPO to complete project review documentation.

6.12.1 Required Conditions for Timber Harvesters

A checklist of conditions is provided to timber sale contractors and to installation staff to insure that cultural resources are protected during a timbering operation. These conditions include:

- Wet weather work will be stopped when soil damage is either expected (based on soil type and amount of rain) and/or observed (based on rut development approaching 6 inches in depth).

- Existing trails, roads, or open areas will be used to move equipment. Additionally, new trails, roads, and open areas, which have been reviewed under Section 106 and received VASHPO concurrence, may be likewise used.
- If clearing must be conducted at historic properties, these areas shall be cleared by hand and there will be no grubbing (i.e., trees will be cut by hand without stump removal).
- Late seral old-growth forests and/or ornamental vegetation on known historic sites shall not be disturbed as they are part of past landscapes and also act as important reference points. Ecological restoration of late seral old-growth stands is encouraged provided ecological restoration plans are reviewed and concurred with by the CRM. Ornamental vegetation comprised of invasive plant species deemed detrimental to the long-term conservation of natural resources of FAPH may be removed or treated in accordance with SOP 20.
- Activities resulting in the accidental discovery of cultural resources shall be immediately ceased and the ENRD notified. Additional guidance is provided in SOP 16 (Unexpected Discovery of Archaeological Resources) and SOP 17 (Discovery of Human Remains).

6.12.2 Procedures to Protect Cultural Resources during Timbering Activities

In addition to the survey and review requirements outlined in SOP 19, standard procedures to protect cultural resources during timbering activities include:

- The use of erosion control measures, such as seeding grasses following timbering, outlined in the Fort A.P. Hill Integrated Natural Resources Management Plan (INRMP) to reduce potential erosion impacts to cultural resources.
- Setting aside a buffer around all significant and potentially significant archaeological sites when timbering is taking place. The size of the buffer is based on the level of disturbance that may result from the proposed activity, and is determined through coordination between the Forestry Branch and the CRM. To establish a required buffer in the field, the CRM marks the boundary of the archaeological site and any significant features or additional areas that must be avoided. For timbering activities that may result in extensive ground disturbance, the Forestry Branch and CRM further coordinate to determine if intensive archaeological investigations will be required or if the buffer area should be extended from the marked site boundary. When further coordination is impractical, a 50-foot buffer should be maintained around marked sites, regardless of the type of timber harvest involved.
- All sites that have been formally evaluated and deemed significant, with concurrence from the VASHPO's office, should be buffered in this manner.
- All archaeological sites that have been identified but not formally evaluated should be considered potentially significant until determined otherwise.
- Boundaries for all sites listed, or considered potentially eligible for inclusion, on the National Register should be established as firmly as is practical by the CRM before a buffer is defined and established on the ground. Typically, the boundaries should be defined with close-interval shovel testing. In some instances, a site may be encountered

as a surface scatter of artifacts in a plowed field or other open area. Such sites will often extend into adjacent wooded or grassy areas, making the boundaries difficult to accurately determine without subsurface testing. Boundaries established from an initial walkover or limited subsurface testing should be over-estimated in an attempt to include an area larger than the actual site. Natural, or man-made, landforms will often provide acceptable site boundaries.

6.12.3 Recommended Emergency Procedures

It is recognized that there are times when an emergency harvest would be necessary due to an insect or disease infestation or in the aftermath of natural disasters such as floods, tornadoes, hurricanes, etc. Although conducting a Phase I study before any tree removal is the preferred alternative, there may be instances in which preventing further damage as quickly as possible in an infested or storm-ravaged area may not leave time to survey in advance. If Phase I survey cannot be completed prior to cleanup activities, the following guidance should be followed:

- No soil disturbing activity or removal of previously undisturbed soil should take place on significant or potentially significant sites except in areas where it is absolutely necessary from a public health and safety perspective,
- While the cleanup is in progress, tree removal (including stumps and roots) and earth-moving activities should be monitored by an archaeologist. Any significant or potentially significant sites encountered during this process should be brought to the attention of the ENRD as soon as they are identified,
- When tree removal is necessary to stop infestations from spreading, the trees should be carefully removed to avoid unnecessary ground disturbance. Grubbing and stump removal should not be conducted at previously recorded archaeological sites, and should be avoided in general. Any required log landing areas will coordinated with the CRM to avoid disturbing known or potential cultural resources.
- If stump removal is necessary, all stumps should be destroyed in-place with a stump grinder rather than being dug, dragged or pushed out with backhoes or other large excavation machines that tend to impact a wide radius of soil around a stump. This procedure should apply to areas where significant or potentially significant sites are known as well as areas lacking any archaeological survey coverage.

6.12.4 Procedures to Protect Cultural Resources during Prescribed Burns

As with timbering activities, proposed prescribed burns are subject to the survey and review requirements in SOP 19. Prescribed burns are generally conducted to remove unwanted vegetation or to eliminate forest matter that would supply fuel to an unwanted fire (e.g., wildfire). Although burns may have the potential to affect surficial cultural resources, properly conducted burns will not result in ground disturbance beyond the removal of surface combustibles. Owing to the limited amount of ground disturbance associated with prescribed burns, subsurface archaeological testing is rarely conducted for these types of activities.

Forestry procedures to protect cultural resources during prescribed burns include:

- No prescribed burn will be planned with a severity that is expected to result in the removal of the entire top layer of organic material.
- If the prescribed burn is expected to result in the removal of the organic layer or create erosion concerns, additional archaeological investigations should be completed prior to the burn in those areas identified by the CRM as having the potential to contain archaeological sites.
- When sites are present in an area of a proposed burn, the types of impacts that the burn will have on any significant and potentially significant sites should be established through coordination between the Forestry Branch and the CRM, and appropriate site protection procedures (such as buffering) should be implemented.
- For prescribed burns, buffering is conducted by the CRM and Forestry Branch in a manner similar to that used for timbering activities. However, during prescribed burns, the buffer boundary is established in the field by the Forestry Branch through the use of a fire break. This fire break may utilize an existing natural or manmade feature (e.g., a creek or a road) or it may require the removal of combustible materials along the perimeter of the site buffer. Additional archaeological investigations may be necessary if fire breaks will result in new ground disturbance.

However, some areas may be prone to erosion following a fire, and if this is the case, any significant or potentially significant sites could be impacted by erosion. For example, Civil War earthworks denuded of a significant amount of vegetation would be prone to erosion and structural damage if that erosion is left unchecked.

Based on forestry procedures used during prescribed burns, the majority of archaeological site types at Fort A.P. Hill will not be adversely affected by burning. For those sites where fire may result in site damage, site buffers are created through coordination between the Forestry Branch and CRM, with fire breaks established around cultural resources to protect sites from burning. Types of sites that may be adversely affected by burning, and protective measures, include:

RESOURCE TYPE	PROTECTIVE MEASURE
Historic sites with extant surficial remains that could be damaged by direct or indirect impacts of fire.	Threatened resources (e.g., fence posts or wood foundation/structure elements) are marked by the CRM for avoidance.
Historic military sites, such as Civil War earthworks, that may be damaged by erosion if denuded of vegetation during a burn.	Regular prescribed burns reduce the amount of fuel available to a fire, thereby reducing the potential that a burn (prescribed or natural) may destroy vegetation and soil matrices.
Sites where radiometric dating or heat signature analysis may be a useful tool to investigate potential deposits, such as datable materials (e.g., wood or food remains) or heat signatures (e.g., burn patterns from domestic or industrial fires).	Known sensitive resources and areas with the potential for sensitive resources are marked by the CRM for avoidance.

6.13 SOP 13: WILDLIFE MANAGEMENT

Historically, the waters and uplands of Fort A.P. Hill were managed with an emphasis on the harvest of fish and wildlife by anglers, trappers, and hunters. More recently, non-game species including rare, threatened, and endangered species which reside within or migrate through the installation environs are also surveyed and managed to maintain or increase species distribution and abundance.

6.13.1 Wildlife Management Activities Which May Impact Cultural Resources

These activities generally are not ground disturbing and, therefore, pose no threat to cultural resources. Since the evidence of former house sites is now largely buried, as archaeological resources, the cultural deposits at these locations offer no known special benefits for wildlife. These home sites are scattered throughout the installation and no specific species can be correlated with these cultural resources. Nevertheless, these former habitation sites, dating to historic times, frequently contain old growth timber and/or ornamental vegetation, which may attract certain species of wildlife and thus enhance the installation's ability to protect both cultural and natural resources in the same setting.

6.13.2 Recommended Procedures for Wildlife Management Activities

- Wildlife management activities that involve ground disturbance (e.g., creating impoundments or food plots) in areas identified as having the potential to contain archaeological resources should be reviewed during the digging permit process and preceded by archaeological testing if appropriate.
- Enhancing existing wetlands for migratory waterfowl does not need to be preceded by archaeological testing.
- Notice of ARPA regulations relative to cultural resources at Fort A.P. Hill shall be posted at the game check station. Additionally, all individuals hunting or fishing at Fort A.P. Hill shall be notified not to disturb artifacts or other cultural resources and asked to report any such resources they may identify while on the installation.

6.14 SOP 14: SOIL MANAGEMENT AND EROSION CONTROL

6.14.1 Installation Activities Which May Impact Cultural Resources

Impacts on cultural resources with respect to erosion/sediment control activities will vary depending on the undertaking. Two types of undertakings that may cause impacts include:

- Repair/replacement/maintenance of an existing control area, without enlargement of that area; and
- New installations, or expansion of existing ones, that involve ground disturbances on previously undisturbed space.

"Undisturbed" should be taken to mean an area that has not been previously graded or otherwise cut deeply into subsoil. Typical agricultural disturbance such as plowing should be excluded from this definition, as potentially informative artifact distributions can often be derived from plow-zone contexts, while shallow plow-truncated but otherwise intact cultural features can be present as subsoil intrusions below the plow-zone.

6.14.2 Recommended Soil Management and Erosion Control Procedures

- Normally, repair/replacement of existing culverts and low water crossings should not impact cultural resources, as the original installation of those facilities would have already significantly disturbed the ground, and the repairs or replacements would typically involve excavation into those previously disturbed soils. However, potential impacts on cultural resources could result from repairs or replacements that involve an area greater than that of the previous disturbance. Accordingly, should it become necessary to broaden an area of earth-moving activities into previously undisturbed ground that also has potential for archaeological resources to be present, a survey to identify presence or absence of any sites should be conducted prior to enlarging that area.
- Work on existing roadways or intersections should follow the same guidelines. Work within current right-of-way that has already been disturbed should not have the potential to impact cultural resources; but widening, relocation, and new drainage alterations do have the potential for impact, provided that these undertakings are in areas that have moderate to high potential for archaeological resources to be present.
- Clearing of trees along road shoulders has potential for impacts if trees are completely taken out with heavy machinery rather than being trimmed, topped, or hand-cut to the stumps. When stumps are pushed out or pulled up and/or when root rakes are used, the ground disturbance is usually severe enough to impact cultural resources, if present. Thus, locations of road work involving significant ground disturbance outside of currently graded or otherwise altered areas should be surveyed, provided that the area has potential for the presence of archaeological resources.

6.15 SOP 15: HAZARDOUS MATERIAL REMOVAL

6.15.1 Installation Activities Which May Impact Cultural Resources

Impacts on cultural resources as a result of hazardous material clean up operations will vary depending on the type and extent of the spill. Given the nature of hazardous materials, emphasis should be placed first on ensuring the health and safety of the public. Although some clean up actions may involve ground disturbance and/or soil removal, consideration of archaeological data should be limited.

6.15.2 Recommended Hazardous Material Removal Procedures

- Hazardous material removal operations in areas with previously identified sites or identified as having the potential to contain sites should be designed to contain soil removal actions to the immediate spill area. All cultural material encountered during the clean up operation should be noted and reported to the CRM.
- Previously identified resources outside of or immediately adjacent to the spill area should be flagged and avoided.

6.16 SOP 16: UNEXPECTED DISCOVERY OF ARCHAEOLOGICAL RESOURCES

6.16.1 Installation Activities Which May Impact Cultural Resources

An unexpected discovery is defined as the discovery of a significant archaeological resource during daily installation activities, such as:

- Construction
- Maintenance activities
- Training operations.

The process outlined below complies with the ACHP regulations for the protection of properties discovered during implementation of an undertaking (36 CFR Part 800.13).

6.16.2 Recommended Notification Procedures

In the event that any previously unrecorded archaeological resource, prehistoric or historic, is discovered during implementation of a project or during training exercises, it will be the responsibility of Fort A.P. Hill, to report the discovery to the VDHR.

- In the event that previously unidentified archaeological resources are discovered during ground disturbing activities, Fort A.P. Hill will immediately halt all work involving subsurface disturbance in the area of the discovery and in the surrounding area where further subsurface remains can reasonably be expected to occur and notify the CRM.
- Immediately following notification of a discovery, the CRM will notify VDHR ([804] 367-2323) by telephone followed by written notification. Written notification shall include a summary of the discovery and current conditions and a statement of the potential significance of the discovery.
- Following notification of the VDHR, the CRM and the VDHR, or an archaeologist approved by them, will immediately inspect the work site and determine the area and nature of the affected archaeological resource. Work may then continue in the area outside the archaeological resource as defined by the CRM and the VDHR, or their designated representative.
- Within 14 working days of original notification of discovery, the CRM, in consultation with the VDHR, will determine the National Register eligibility of the resource.
- If the resource is determined eligible for the National Register, Fort A.P. Hill shall prepare a plan for its avoidance, protection, recovery of information, or destruction without data recovery. This plan shall be approved by the CRM, in consultation with the VDHR, prior to implementation.
- Work in the affected area shall not proceed until either:
    - The development and implementation of mitigation procedures; **or**
    - A determination that the remains are not eligible for inclusion on the National Register.

6.17 SOP 17: DISCOVERY OF HUMAN REMAINS

The discovery and/or disturbance of human remains is a sensitive issue that Fort A.P. Hill should address with care if the situation arises. Human remains discovered during the implementation of an undertaking which has already been reviewed under Section 106, should be treated as an unexpected discovery, or as required in any applicable agreement(s). The CRM is responsible for ensuring that compliance with all relevant laws and regulations regarding human remains are carried out.

If human remains are inadvertently discovered during ground disturbing activities, the following steps should be taken.

- Fort A.P. Hill will immediately halt all construction work involving subsurface disturbance in the area of the discovery and in the surrounding area where further subsurface remains can reasonably be expected to occur; and notify the CRM.
- The CRM will ensure that immediate steps are taken to secure and protect the discovered human remains, and provide additional stabilization or covering as appropriate.
- Immediately following notification of a discovery, the CRM will notify the VDHR, ([804] 367-2323) by telephone followed by written notification. Written notification shall include a summary of the discovery and current conditions and a statement of the potential significance of the discovery.
- Following notification of the VDHR, the CRM and the VDHR, or an archaeologist approved by them, will immediately inspect the work site and determine the extent and nature of the human remains. Construction work may then continue in the area outside the discovery as defined by the CRM and the VDHR, or their designated representative.
- If the VDHR determines that the remains are of historic significance and the remains cannot be avoided, the CRM will complete a VDHR burial permit application and submit it to the VDHR with appropriate supporting documentation.
- Work in the affected area shall not proceed until either:
  - The development and implementation of appropriate data recovery or other recommended mitigation procedures, **or**
  - A determination is made that the located remains are not eligible for inclusion on the National Register.

6.18 SOP 18: PROTECTION OF CULTURAL RESOURCES FROM NATURAL DISASTERS, FIRE, AND VANDALISM

As many of the cultural resources at Fort A.P. Hill are located in remote settings that are not continuously occupied, the following measures are recommended:

- Each structure should be fitted with smoke detectors, and possibly a motion detector or break glass detector. These devices can send wireless signals to a central control station. Early detection of fire or unauthorized entry may be key to the long-term protection of these structures.

- The Fire Department, should, if it has not already, prepare a specific fire fighting plan for each structure. Each fire hydrant should be located. Specific guidance must be established for the fire fighters regarding approach to each structure. Access into each structure with common "master" keys must be assured. Breaking out windows or doors to gain entry, or fight the fire, should be avoided if at all possible.

- The Military Police should prepare a similar plan regarding unauthorized entry or vandalism, if such a plan does not already exist. Again, access into each structure with common "master" keys must be assured.

- Should there be a fire or natural disaster, Fort A.P. Hill staff should enclose the damaged building(s) as soon as possible to keep the weather out. Then, a specialist in historic preservation architecture should be consulted as soon as possible regarding emergency and permanent repairs. Well-intentioned emergency efforts can be very detrimental to historic preservation objectives.

6.19 SOP 19: CONDUCTING CULTURAL RESOURCE SURVEYS IN ASSOCIATION WITH FORESTRY ACTIVITIES

(TEXT AS FILED WITH THE VASPHO)

6.19.1 Natural Resource Site Assessment (NRSA) Process

The natural resource management team at Fort A.P. Hill has developed an internal review process to ensure that proposed undertakings are subject to comprehensive review prior to implementation. As Fort A.P. Hill policy stresses the avoidance of natural and cultural resources whenever possible, the Natural Resource Site Assessment (NRSA) process has been developed to identify significant resources that may be present in proposed project areas. The NRSA process requires that the proponent of an undertaking (e.g., the Forestry Branch) provide the natural resource management team with data so that potential resource management conflicts can be identified and undertakings can be modified early in the planning stages. These data include:

- project details and
- appropriate spatial data.

Core members of the natural resource management team include the Fort A.P. Hill Foresters, Environmental Specialists, Wildlife Biologist, Natural Resource Specialist, Range and Training Lands Assessment Coordinator, Aquatic Resources Manager, NEPA Coordinator, and CRM. The CRM meets the Secretary of the Interior's Professional Qualifications Standards for an archaeologist and is responsible for coordinating all necessary cultural resource reviews (e.g., Section 106 and NEPA review) with the NRSA process.

The natural resource management team documents the results of their field investigations and studies through Fort A.P. Hill's standardized NRSA forms and geographic information system mapping. Once the proponent of the undertaking has been advised of any potential resource management issues, project plans are finalized and the natural resource management team determines if the project will require any restrictions or mitigation(s) of effects. Based on this information, the natural resource management team determines other requirements including:

- environmental permits (e.g., stormwater, wetlands, threatened and endangered species, etc.) and
- the necessary level of environmental documentation (e.g., record of environmental consideration, environmental assessment, environmental impact statement, etc.).

The NHPA Section 106 process is coordinated with the NRSA process and any environmental review under the NEPA. Through the NEPA process, appropriate public and government entities are notified of, and asked to provide comments relative to, the proposed undertaking. For forestry undertakings, this notification process is coordinated with the United States Fish and Wildlife Service, Environmental Protection Agency, Caroline County, the Rappahannock Area

Development Commission, and the Commonwealth of Virginia. NEPA coordination with the Commonwealth of Virginia is conducted through the Virginia Department of Environmental Quality (DEQ) and typically involves review by the Departments of Game and Inland Fisheries, Agriculture and Consumer Services, Conservation and Recreation, Transportation, and Historic Resources, as well as other interested state or local agencies identified by the DEQ.

6.19.2 Outreach Process

Section 106 consultation with Federal tribes, or other interested parties, relative to historic properties is coordinated by the CRM. To identify Federal tribes that have an interest in cultural resources at Fort A.P. Hill, correspondence has been initiated with 16 Federal tribes. Additionally, the Council on Virginia Indians and the Rappahannock Tribe have been consulted and have expressed interest in cultural resources related to Native Americans in the Fort A.P. Hill area. The general public is typically invited to comment on projects through the Fort A.P. Hill Public Affairs Office, which publishes public notices in local papers (e.g., The Free Lance Star, The Caroline Progress, etc.) and maintains project documentation for public review.

To increase public outreach and seek active public participation, Fort A.P. Hill has established a three part historical documentation program. This program includes:

- an oral history project that is intended to identify persons who lived on Fort A.P. Hill prior to Army acquisition and collect information and interviews regarding work and life in the area.

- detailed historical deed research for Fort A.P. Hill.

- the integration of the oral history documentation and the historical deed research to create a detailed historical context for Fort A.P. Hill.

6.19.3 Survey and Review Requirements

The CRM is responsible for determining the level of survey or other investigations required for a proposed undertaking and for insuring that such investigations meet the VDHR requirements for project review. The level of survey (i.e., pedestrian surface survey or subsurface testing) is determined in consultation with the proponent of the undertaking and Fort A.P. Hill Range Control staff. For example, if the undertaking will result in limited ground-disturbance or will be located in an active Impact Area, the CRM may choose to perform pedestrian surface survey with no subsurface testing. When an undertaking is located in an area that has been previously surveyed for cultural resources, the level of effort employed during the previous survey will be taken into consideration during the new survey. For example, if the previous survey consisted of pedestrian surface survey and the proposed undertaking will result in significant ground disturbance (e.g., skid trail development), then the new survey may require subsurface testing in areas of proposed disturbance. NRSA cultural resource surveys generally require field inspection regardless of previous survey status, with exceptions due to safety issues.

In support of the installation's training mission, forestry activities are conducted to maintain suitable ground conditions in the ranges and training areas, and military facilities are constructed or modified as required for training purposes. Forestry activities are currently being coordinated on a fiscal-year basis, with future activities to be planned on a five-year basis. As the total amount of acreage involved in these activities can easily exceed 30,000 acres, it is necessary to conduct ongoing cultural resource surveys focusing on individually proposed forestry blocks according to proposed harvest/activity schedules. To simplify and expedite cultural resource review of these forestry blocks, the CRM may submit the results of a forestry block survey to the VDHR in the format of an executive summary that describes the project area, proposed activities, field methods, and results/recommendations of the survey. The executive summary will be considered to constitute all the necessary documentation for VDHR project review and the VDHR will provide a response to the summary within 30 days. However, the VDHR review process will not be considered complete until the CRM has submitted a detailed technical report that compiles the results of all cultural resource surveys that were conducted in association with forestry activities and for which executive summaries were submitted to the VDHR within the previous six months. The first such report was submitted to the VDHR by 31 July 2007, with subsequent reports submitted on a semiannual basis. If the CRM does not meet the Secretary of the Interior's qualifications for an archaeologist, or fails to submit required reports, the VDHR has no obligation to accept additional executive summaries as full documentation for project review.

6.20 SOP 20: MANAGEMENT OF NON-NATIVE INVASIVE PLANT SPECIES

Management and control of the spread of invasive species at Fort A. P. Hill is required under Executive Orders 13112 and 13508, and Army Regulation 200-1. Various methods exist for management of invasive plant species; some methods have the potential to negatively impact cultural resources.

Some species of invasive plants may indicate the presence of a cultural resource; discovery of these species requires notifying the CRM before eradication takes place. Cultural sites require proper documentation and management before evidence and associated data are lost. A list of invasive plant species with known cultural uses is included. If these species are present consultation with the CRM is required.

6.20.1 Methods for Control

Choice of method is based upon several factors. The first consideration is the type of species requiring management. Some methods of control will actually result in conditions favorable for re-growth and spread of a species intended for eradication. The methods applicable to specific types of invasive species needing management require consideration. A second consideration for proper choice of method is size of individual organisms as well as population. Some methods are not practical depending on size. Choice of method will determine the level of CRM review to some extent. Avoidance of cultural sites should be the first option considered. Hand trimming and chemical methods may be considered to have less of an effect than other methods, thereby making them better choices if avoidance is not an option.

Examples of control methods and the potential of these methods to affect cultural resources are:

CONTROL METHOD	LOW POTENTIAL IMPACT ON CULTURAL RESOURCES	HIGH POTENTIAL IMPACT ON CULTURAL RESOURCES
Manual	Trimming, Cutting, Girdling	Pulling, Digging, Root Wrench
Chemical	Selective herbicides	Nonselective herbicides
Mechanical	Mowing, Brush Hogging	Skid Steers, Dozers, Masticators, Root Rakes
Biological	Grazing animals (e.g., sheep)	Micro-organisms (e.g., fungi)
Landscape Manipulation	Mulching, Graveling	Prescribed burning, Any ground altering activities

General rule: Activities involving any ground disturbance or in the immediate vicinity of historic sites require consultation with the CRM. If species with cultural uses are present consultation with the CRM is required.

If replanting of an area is necessary, any ground disturbing activities require consultation with the CRM. Subsurface testing of the area may be required if it has not been previously cleared by the CRM for ground disturbing work. SOP 12 should be consulted in reference to access roads or trails for movement of equipment, as well as in reference to removal of vegetation from known historic sites.

6.20.1.1 Manual Control

Manual control involves trimming, cutting, mowing, pulling, digging, and girdling by hand. These methods are usually used on smaller plants and colonies. Trimming, cutting, mowing, and girdling will not create substantial ground disturbance, however pulling or digging of roots, rhizomes, or tubers will result in ground disturbance. Consultation with the CRM is required before these methods are used, as subsurface testing for cultural resources may be required.

6.20.1.2 Chemical Control

Chemical control utilizes application of herbicides to manage invasive plant species. This method is considered one of the most effective for management and eradication of invasive plant species and colonies. Chemical methods are not known to cause undesired effects to cultural resources. These methods may be the best choice for eradication of invasive species on cultural sites. Use of chemical methods do not require consultation with the CRM, however occurrence of particular species as indicators of possible cultural resources requires consideration and consultation with the CRM.

6.20.1.3 Mechanical Control

Mechanical control utilizes heavy machinery to remove invasive plant species. Equipment available at Fort A. P. Hill includes Skid Steers with attachments, Bush Hogs, Masticators, and Dozers with attachments. These methods are useful in areas of well established infestation, but are likely to result in significant ground disturbance. Mechanical methods pose a great threat to both standing and subsurface cultural resources. While mowing or bush hogging do not generally result in ground disturbance, methods using skid steers, dozers, masticators, and root rakes will result in significant ground disturbance and possibility of damage to structural resources, resulting in the loss of valuable data. Use of these methods requires consultation with the CRM prior to beginning work.

6.20.1.4 Biological Control

Biological control involves use of organisms such as insects, fungi, and grazing animals that target specific invasive species. Use of biological methods requires consideration of the effects, such as weathering, on any cultural resources present. Fungi, insects, or grazing animals may have undesired effects on extant wooden or stone portions of cultural sites. Consultation with the CRM before use of these methods is required to allow for proper documentation, as well as monitoring of any undesired effects.

6.20.1.5 Landscape Manipulation Control

Landscape manipulation control involves alteration of a landscape system to achieve the desired result. Use of these methods requires consultation with the CRM. A common method of Landscape manipulation is prescribed burning. SOP 12 for prescribed burning should be referenced and followed.

6.20.2 Procedures for Review

- FAPH Environmental identifies areas of invasive plant species requiring treatment.
- Environmental transmits project area, species of invasive plants present, and proposed management methodology to the CRM.
- Based on location, species present, and proposed methodology CRM determines potential for cultural resources in the project area and whether testing needs to occur to clear area for proposed work.
- In general, manual trimming of invasive species may be considered to have no effect; the location of plant species should be recorded.
- If CRM determines testing and/or documentation are necessary, these steps must be complete before management or eradication work commences.

Summary of CRM Review Process

- Once a project is identified and details are transmitted to the CRM, the CRM will determine if the project is an Undertaking with the potential to disturb Historic Properties.
    - If there is no potential to disturb Historic Properties, the project will proceed.
    - If a potential to disturb Historic Properties exists, survey (Ph. I) testing will commence.
- If no site is identified after survey (Ph. I) testing, the CRM will notify the SHPO of the findings and the project will proceed.
- If a site is identified, the CRM will determine whether the site is potentially eligible or not eligible.
    - If the site is determined not eligible, the CRM will consult with the SHPO. The project will proceed after SHPO concurrence.
- If the site is determined potentially eligible, the project proponent and the CRM will work to identify project alternatives. The CRM will coordinate with the SHPO if appropriate.
    - After consultation between project proponent, CRM, and SHPO occurs, the modified project will proceed.
- If no alternatives are identified, the CRM will proceed with an archaeological evaluation (Ph. II) to determine eligibility.
    - If the site is determined not eligible and the SHPO concurs, the project will proceed.
- If the site is determined to be eligible, the CRM will coordinate with the Garrison Commander to develop an appropriate plan for mitigation of adverse effects.
    - Once mitigation has occurred, the project will proceed.

6.20.3 List of Invasive Species

The following list includes the common names of invasive species which may require the use of a management methodology harmful to cultural resources. An asterisk (*) is used to highlight species that may be indicative of the presence of cultural resources.

COMMON NAME		SCIENTIFIC NAME
Garlic Mustard		*Alliaria peiolata*
Porcelain-Berry	*	*Ampelopsis brevipedunculata*
Oriental Bittersweet		*Celastrus orbiculatus*
Chinese Yam		*Dioscorea opposita*
Winged Burning Bush	*	*Euonymus alatus*
Amur Honeysuckle	*	*Lonicera maackii*
Purple Loosestrife		*Lythrum salicaria*
Lesser Celandine		*Ranunculus ficaria*
Tree-of-Heaven		*Ailanthus altissima*
Japanese Barberry		*Berberis thunbergii*
Musk Thistle		*Carduus nutans*
Spotted Knapweed		*Centaurea maculosa*
Autumn Olive		*Elaeagnus umbellata*
European Privet		*Ligustrum vulgare*
Japanese Honeysuckle	*	*Lonicera japonica*
Japanese Stiltgrass		*Microstegium vimineum*
Common Reed		*Phragmites australis*
Japanese Knotweed		*Fallopia japonica*
Kudzu	*	*Pueraria montana*
Multiflora Rose	*	*Rosa multiflora*
Wineberry		*Rubus phoenicolasius*
Johnsongrass	*	*Sorghum halepense*
Periwinkle	*	*Vinca minor*
Wisteria	*	*Wisteria floribunda* & *Wisteria sinensis*
Bamboo	*	*Phyllostachys aurea*

7.0 ECONOMIC ANALYSIS

According to AR 200-1, Fort A.P. Hill must conduct an economic analysis of historic buildings and structures that are being considered for demolition and replacement. The NHPA requires that historic properties be considered for re-use to the maximum extent feasible before disposal of the property. The decision to re-use, replace, or demolish a facility will be justified with a least cost, life-cycle economic analysis. When the economic analysis demonstrates that rehabilitation costs exceed 70% of the building's replacement cost, replacement construction will be used. However, the CRM and other decision makers on the installation have the right to waive the 70% value if the significance of a particular historic structure warrants special attention. Considerations for the economic analysis include:

- Rehabilitation costs should include bringing the building back to its original state.
- Assessment of new construction must evaluate life-cycle maintenance cost, utility cost, replacement costs, and other pertinent factors.
- Replacement costs should not be based on replacement in kind but on a design that is architecturally compatible with the historic property.
- If the building to be disposed of is a historic property, potential reuses of the building must be analyzed prior to making the final decision to dispose of the property.

8.0 PUBLIC INVOLVEMENT PLAN

8.1 Public Participation Guidelines

Section 106 requires Fort A.P. Hill to consider the public's views regarding historic properties when planning and implementing projects. Identifying and addressing public comments should be a regular part of Fort A.P. Hill's overall planning system whether the activities are specific projects or ongoing management activities. The following guidance outlines general public participation objectives, methods, and recommended documentation.

Fort A.P. Hill's public participation efforts should be designed to ensure good faith information sharing, open and constructive discussion of all viable treatment alternatives, and a respect for diverse points of view. Accordingly, public participation should be designed to support Fort A.P. Hill's preservation objectives, as well as its overall mission and program responsibilities. The PAO handles all public requests for information and comments relative to proposed undertakings. Basic objectives for public participation programs include:

- Obtain information from individuals who are likely to have information regarding historic properties potentially affected by the proposed undertaking.
- Seek knowledge and expertise of professional and avocational practitioners.
- Involve property owners adjacent to the installation, local governments, Indian tribes, neighborhood associations, and other individuals or organizations whose immediate interests may be affected by the proposed action.
- Consider views of all participants and incorporate them into the information gathering and decision-making process.
- Inform the public of the proposed undertaking in a timely manner when the widest possible range of alternatives is still available for consideration.
- Explicitly request the views of the public on historic preservation issues in public notices.
- Ensure that project information is available to individuals and organizations that have expressed an interest in the project.

8.2 Level and Type of Public Participation

Fort A.P. Hill should ensure that the public participation effort is appropriate for the size and scale of the project, the nature of the expected effects, the historic properties likely to be affected, and the expected level of public interest. For example, installation of utilities within existing trenches will require no public notification beyond what may be required under other environmental requirements. Conversely, if installation of utilities will affect Native American burials, then the level of public notification should be sufficient to determine whether or not there are interested Indian tribes and to meet other applicable requirements such as NAGPRA and the Virginia burial laws. Typically, public notices placed in local newspapers, direct mailings, and public meetings are the most traditional forms of public notification.

For large-scale undertakings requiring environmental documents, Fort A.P. Hill is encouraged to utilize public notification and hearing processes established by NEPA to solicit public views regarding historic properties and potential effects. In such instances, it is important to ensure that notifications and hearings specifically address expected cultural resources, expected effects, and proposed alternatives to avoid, minimize, or mitigate adverse effects.

8.3 Making Documentation Available to the Public

When the public's views and/or participation are requested, what and how much information is provided for consideration should be dependent upon the scale and nature of the proposed project. For routine or small-scale projects, maintaining project documentation in Fort A.P. Hill files for public inspection is sufficient. For projects requiring public review under NEPA, project and resource information can be included in the environmental document.

In some instances, the location of resources involved may be particularly sensitive due to vandalism and/or looting. In these cases, Section 304 of the NHPA directs Federal agencies, after consultation with the Secretary of the Interior, to withhold from disclosure to the public, information relating to the character and location of historic resources. Deciding whether or not to withhold such information should be balanced with the proposed threat to the resource and the level of public input needed to make informed decisions. A practical solution frequently used by agencies is to place sensitive information regarding resource locations in confidential appendices that are available only to those with a need to know.

8.4 Documenting Public Participation Efforts

The primary purpose for documenting public participation efforts is to enable regulatory agency reviewers, including Federal courts in the event of litigation, to review the record and determine whether Fort A.P. Hill's efforts have been adequate and reasonable. In most cases, documentation of public comment and participation is best organized chronologically and includes, but is not limited to, reports, written comments, summaries of public meetings, and telephone conversations. Generally speaking, Fort A.P. Hill's public participation documentation should include:

- Efforts Fort A.P. Hill took to ensure that the public was aware of the proposed undertaking and their responsibilities under Section 106.
- What individuals and organizations were contacted and why they were contacted.
- How specific individuals and organizations were involved in the Section 106 process.
- How the concerns or issues raised by the public were answered and addressed in project planning.

9.0 REFERENCES

Advisory Council on Historic Preservation, Protection of Historic and Cultural Properties, 36 CFR Part 800.

Archaeological and Historic Preservation Act of 1974. 16 USC 469-469c.

Archaeological Resources Protection Act of 1979. 16 USC 470aa-470ll.

AR 200-1, Army Regulation 200-1, Environmental Protection and Enhancement. 13 December 2007.

Code of Federal Regulations 32 CFR Part 651 (formerly AR 200-2), Environmental Analysis of Army Actions. 29 March 2002.

Council on Environmental Quality, Regulations Implementing the National Environmental Policy Act, 40 CFR Part 1500-1508.

Department of Defense, Protection of Archeological Resources, 32 CFR Part 229.

Department of the Interior, Determinations of Eligibility for Inclusion in the National Register of Historic Places, 36 CFR Part 63.

Department of the Interior, National Register of Historic Places, 36 CFR Part 60.

Department of the Interior, Native American Graves Protection and Repatriation Act, 43 CFR Part 10.

National Environmental Policy Act. 42 USC 4321-4370c.

National Historic Preservation Act of 1966, as amended. 16 USC 470-470w.

Native American Graves Protection and Repatriation Act of 1990. 25 USC 3001-3013.

National Register of Historic Places - Nomination Form for Liberty Baptist Church, VDHR Site No. 16-69, prepared in 1995.

National Register of Historic Places - Nomination Form for Travis Lake Historic District, VDHR Site No. 16-349-23, prepared in 1995.

10.0 LIST OF PREPARERS

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ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
AHPA	Archaeological and Historic Preservation Act
AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effect
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
BOID	Business Operations/Integration Division
BRAC	Base Realignment and Closure
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CRM	Cultural Resource Manager
DoD	Department of Defense
DPTMS	Directorate of Plans, Training, Mobilization and Security
DPW	Directorate of Public Works
EA	Environmental Assessment
EIS	Environmental Impact Statement
FR	Federal Register
GIS	Geographic Information System
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
ITAM	Integrated Training Area Management
LIDAR	Light Distancing and Ranging
MOA	Memorandum of Agreement
NAGPRA	Native American Graves Protection and Repatriation Act
NPS	National Park Service
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRSA	Natural Resources Site Assessment
PA	Programmatic Agreement
SOP	Standard Operating Procedure
THPO	Tribal Historic Preservation Officer
USC	United States Code
USGS	United States Geological Survey
VASHPO	Virginia State Historic Preservation Officer
VDHR	Virginia Department of Historic Resources

APPENDIX A

Antiquities Act of 1906

Antiquities Act of 1906

AS AMENDED

This Act became law on June 8, 1906 (34 Stat. 225, 16 U.S.C. 431-433) and has been amended once. This description of the Act, as amended, tracks the language of the United States Code except that (following common usage) we refer to the "Act" (meaning the Act, as amended) rather than to the "subchapter" or the "title" of the Code.

16 U.S.C. 433, Penalties for damage, destruction, etc. of antiquities

Section 1

Any person who shall appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated, shall, upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

16 U.S.C. 431, Proclamation of national monuments, reservation of lands, etc.

Section 2

The President of the United States is authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with proper care and management of the objects to be protected. When such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the Government, and the Secretary of the Interior is hereby authorized to accept the relinquishment of such tracts in [sic] behalf of the Government of the United States.

16 U.S.C. 431a, Limitation on more national monuments in Wyoming

No further extension or establishment of national monuments in Wyoming may be undertaken except by express authorization of Congress.

16 U.S.C. 432,
Permits for excavation, etc.

Section 3

Permits for the examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity upon the lands under their respective jurisdictions may be granted by the Secretaries of the Interior, Agriculture, and Army to institutions which they may deem properly qualified to conduct such examination, excavation, or gathering, subject to such rules and regulation as they may prescribe: *Provided,* That the examinations, excavations, and gatherings are undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects, and that the gatherings shall be made for permanent preservation in public museums.

16 U.S.C. 432,
Rules and regulations

Section 4

The Secretaries of the departments aforesaid shall make and publish from time to time uniform rules and regulations for the purpose of carrying out the provisions of this Act.

APPENDIX B

Historic Sites Act of 1935

Historic Sites Act of 1935

AS AMENDED

This Act became law on August 21, 1935 (49 Stat. 666; 16 U.S.C. 461-467) and has been amended eight times. This description of the Act, as amended, tracks the language of the United States Code except that (in following common usage) we refer to the "Act" (meaning the Act, as amended) rather than to the "subchapter" or the "title" of the Code. This title is not an official short title, but is merely a convenience for the reader.

16 U.S.C. 461, Declaration of national policy

Section 1

It is hereby declared that it is a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.

16 U.S.C. 462, Administration by the Secretary of the Interior, powers and duties enumerated

16 U.S.C. 462(a), Basis for Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey

16 U.S.C. 462(b), Basis for National Historic Landmarks Program

16 U.S.C. 462(c), Collection of true and accurate information

Section 2

The Secretary of the Interior (hereinafter in sections 1 to 7 of this Act referred to as the Secretary), through the National Park Service, for the purpose of effectuating the policy expressed in section 1 of this Act, shall have the following powers and perform the following duties and functions:

(a) Secure, collate, and preserve drawings, plans, photographs, and other data of historic and archaeologic sites, buildings, and objects.

(b) Make a survey of historic and archaeologic sites, buildings, and objects for the purpose of determining which possess exceptional value as commemorating or illustrating the history of the United States.

(c) Make necessary investigations and researches in the United States relating to particular sites, buildings, or objects to obtain true and accurate historical and archaeological [sic] facts and information concerning the same.

Historic Sites Act of 1935

16 U.S.C. 462(d), Federal acquisition of personal or real property

(d) For the purpose of sections 1 to 7 of this Act, acquire in the name of the United States by gift, purchase, or otherwise any property, personal or real, or any interest or estate therein, title to any real property to be satisfactory to the Secretary: *Provided,* That no such property which is owned by any religious or educational institution, or which is owned or administered for the benefit of the public shall be so acquired without the consent of the owner: *Provided further,* That no such property shall be acquired or contract or agreement for the acquisition thereof made which will obligate the general fund of the Treasury for the payment of such property, unless or until Congress has appropriated money which is available for that purpose.

16 U.S.C. 462(e), Cooperative agreements

(e) Contract and make cooperative agreements with States, municipal subdivisions, corporations, associations, or individuals, with proper bond where deemed advisable, to protect, preserve, maintain, or operate any historic or archaeologic building, site, object, or property used in connection therewith for public use, regardless as to whether the title thereto is in the United States: *Provided,* That no contract or cooperative agreement shall be made or entered into which will obligate the general fund of the Treasury unless or until Congress has appropriated money for such purpose.

16 U.S.C. 462(f), Protection of historic properties, related museums

(f) Restore, reconstruct, rehabilitate, preserve, and maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archaeological significance and where deemed desirable establish and maintain museums in connection therewith.

16 U.S.C. 462(g), Commemorative plaques

(g) Erect and maintain tablets to mark or commemorate historic or prehistoric places and events of national historical or archaeological [sic] significance.

Historic Sites Act of 1935

16 U.S.C. 462(h), Operation and management of historic properties

(h) Operate and manage historic and archaeologic sites, buildings, and properties acquired under the provisions of sections 1 to 7 of this Act together with lands and subordinate buildings for the benefit of the public, such authority to include the power to charge reasonable visitation fees and grant concessions, leases, or permits for the use of land, building space, roads, or trails when necessary or desirable either to accommodate the public or to facilitate administration: *Provided,* That the Secretary may grant such concessions, leases, or permits and enter into contracts relating to the same with responsible persons, firms, or corporations without advertising and without securing competitive bids.

16 U.S.C. 462(i), Organization of special corporations to carry out purposes of the Act

(i) When the Secretary determines that it would be administratively burdensome to restore, reconstruct, operate, or maintain any particular historic or archaeologic site, building, or property donated to the United States through the National Park Service, he may cause the same to be done by organizing a corporation for that purpose under the laws of the District of Columbia or any State.

16 U.S.C 462(j), Educational programs

(j) Develop an educational program and service for the purpose of making available to the public facts and information pertaining to American historic and archaeologic sites, buildings, and properties of national significance. Reasonable charges may be made for the dissemination of any such facts or information.

16 U.S.C. 462(k), Regulations and fines

(k) Perform any and all acts, and make such rules and regulations not inconsistent with sections 1 to 7 of this Act as may be necessary and proper to carry out the provisions thereof. Any person violating any of the rules and regulations authorized by said sections shall be punished by a fine of not more than $500 and be adjudged to pay all cost of the proceedings.

16 U.S.C. 463, National Park System Advisory Board

Section 3

16 U.S.C. 463(a), Establishment, composition, duties

(a) There is hereby established a National Park System Advisory Board, whose purpose shall be to advise the Director of the National Park Service on matters relating to the National Park Service, the National Park System, and programs administered by the National Park Service. The Board shall advise the Director on matters submitted to the Board by the Director as well as any other issues identified by the Board. Members of the Board shall be appointed

on a staggered term basis by the Secretary for a term not to exceed 4 years and shall serve at the pleasure of the Secretary. The Board shall be comprised of no more than 12 persons, appointed from among citizens of the United States having a demonstrated commitment to the mission of the National Park Service. Board members shall be selected to represent various geographic regions, including each of the administrative regions of the National Park Service. At least 6 of the members shall have outstanding expertise in 1 or more of the following fields: history, archeology, anthropology, historical or landscape architecture, biology, ecology, geology, marine sciences, or social science. At least 4 of the members shall have outstanding expertise and prior experience in the management of national or State parks or protected areas, or national [sic; probably meant "natural"] or cultural resources management. The remaining members shall have outstanding expertise in 1 or more of the areas described above or in another professional or scientific discipline, such as financial management, recreation use management, land use planning or business management important to the mission of the National Park Service. At least 1 individual shall be a locally elected official from an area adjacent to a park. The Board shall hold its first meeting by no later than 60 days after the date on which all members of the Advisory Board who are to be appointed have been appointed. Any vacancy in the Board shall not affect its powers, but shall be filled in the same manner in which the original appointment was made. The Board may adopt such rules as may be necessary to establish its procedures and to govern the manner of its operations, organization, and personnel. All members of the Board shall be reimbursed for travel and per diem in lieu of subsistence expenses during the performance of duties of the Board while away from home or their regular place of business, in accordance with subchapter 1 of chapter 57 of Title 5 [5 U.S.C. 5701-5709, travel and subsistence expenses]. With the exception of travel and per diem as noted above, a member of the Board who is otherwise an officer or employee of the United States Government shall serve on the Board without additional compensation.

It shall be the duty of such board to advise the Secretary on matters relating to the National Park System, to other related areas, and to the administration of sections 1 to 7 of this Act, including but not limited to matters submitted to it for consideration by the Secretary, but it shall not be required to recommend as to the suitability or desirability of surplus real and related personal property for use as an historic monument. Such board shall also provide recommendations on the designation of national historic landmarks and national natural landmarks. Such board is strongly encouraged to consult with the major scholarly and professional organizations in the appropriate disciplines in making such recommendations.

16 U.S.C. 463(b), Staff, applicability of Federal law

(b)(1) The Secretary is authorized to hire 2 full-time staffers to meet the needs of the Advisory Board.

(2) Service of an individual as a member of the Board shall not be considered as service or employment bringing such individual within the provisions of any Federal law relating to conflicts of interest or otherwise imposing restrictions, requirements, or penalties in relation to the employment of persons, the performance of services, or the payment or receipt of compensation in connection with claims, proceedings, or matters involving the United States. Service as a member of the Board, or as an employee of the Board, shall not be considered service in an appointive or elective position in the Government for purposes of Section 8344 of Title 5 [5 U.S.C. 8344, civil service retirement, annuities and pay on reemployment], or comparable provisions of Federal law.

16 U.S.C. 463(c), Authority of Board

(c)(1) Upon request of the Director, the Board is authorized to—

(A) hold such hearings and sit and act at such times,

(B) take such testimony,

(C) have such printing and binding done,

(D) enter into such contracts and other arrangements,

(E) make such expenditures, and

(F) take such other actions, as the Board may deem advisable.

Any member of the Board may administer oaths or affirmations to witnesses appearing before the Board.

(2) The Board may establish committee or subcommittees. Any such subcommittees or committees shall be chaired by a voting member of the Board.

16 U.S.C. 463(d), Federal Advisory Committee Act

(d) The provisions of the Federal Advisory Committee Act [Public Law 92-463, as amended, 5 U.S.C. Appendix] shall apply to the Board established under this section with the exception of section 14(b).

16 U.S.C. 463(e), Cooperation of Federal agencies, use of funds

(e)(1) The Board is authorized to secure directly from any office, department, agency, establishment, or instrumentality of the Federal Government such information as the Board may require for the purpose of this section, and each such officer, department, agency, establishment, or instrumentality is authorized and directed to furnish, to the extent permitted by law, such information, suggestions, estimates, and statistics directly to the Board, upon request made by a member of the Board.

(2) Upon the request of the Board, the head of any Federal department, agency, or instrumentality is authorized to make any of the facilities and services of such department, agency, or instrumentality [sic; word missing, probably "available"] to the Board, on a nonreimbursable basis, to assist the Board in carrying out its duties under this section.

(3) The Board may use the United States mails in the same manner and under the same conditions as other departments and agencies in the United States.

16 U.S.C. 463(f), Sunset

(f) The National Park System Advisory Board shall continue to exist until January 1, 2006. The provisions of section 14(b) of the Federal Advisory Committee Act (the Act of October 6, 1972; 86 Stat. 776) [Public Law 92-463, as amended, 5 U.S.C. Appendix] are hereby waived with respect to the Board, but in all other respects, it shall be subject to the provisions of the Federal Advisory Committee Act.

16 U.S.C. 463(g), National Park Service Advisory Council

(g) There is hereby established the National Park Service Advisory Council (hereafter in this section referred to as the "advisory council") which shall provide advice and counsel to the National Park System Advisory Board. Membership on the advisory council shall be limited to those individuals whose term on the advisory board has expired. Such individuals may serve as long as they remain active except that not more than 12 members may serve on the advisory council at any one time. Members of the advisory council shall not have a vote on the National Park System Advisory Board. Members of the advisory council shall receive no salary but may be paid expenses incidental to travel when engaged in discharging their duties as members. Initially, the Secretary shall choose 12 former members of the Advisory Board to constitute the advisory council. In so doing, the Secretary shall consider their professional expertise and demonstrated commitment to the National Park System and to the Advisory Board.

16 U.S.C. 464, Cooperation with governmental and private agencies

Section 4

16 U.S.C. 464(a), Authorization

(a) The Secretary, in administering sections 1 to 7 of this Act, is authorized to cooperate with and may seek and accept the assistance of any Federal, State, or municipal department or agency, or any educational or scientific institution, or any patriotic association, or any individual.

16 U.S.C. 464(b), Technical advisory committees

(b) When deemed necessary, technical advisory committees may be established to act in an advisory capacity in connection with the restoration or reconstruction of any historic or prehistoric building or structure.

16 U.S.C. 464(c), Technical assistance

(c) Such professional and technical assistance may be employed, and such service may be established as may be required to accomplish the purposes of sections 1 to 7 of this Act and for which money may be appropriated by Congress or made available by gifts for such purpose.

16 U.S.C. 465, Jurisdiction of States and political subdivisions in acquired lands

Section 5

Nothing in sections 1 to 7 of this Act shall be held to deprive any State, or political subdivision thereof, of its civil and criminal jurisdiction in and over lands acquired by the United States under said sections.

Historic Sites Act of 1935

16 U.S.C. 466, Requirement for specific authorization

Section 6

16 U.S.C. 466(a), In general

(a) Except as provided in subsection (b) of this section, notwithstanding any other provision of law, no funds appropriated or otherwise made available to the Secretary of the Interior to carry out section 2(e) or 2(f) of this Act may be obligated or expended after October 30, 1992—

(1) unless the appropriation of such funds has been specifically authorized by law enacted on or after October 30, 1992; or

(2) in excess of the amount prescribed by law enacted on or after such date.

16 U.S.C. 466(b), Savings provision

(b) Nothing in this section shall prohibit or limit the expenditure or obligation of any funds appropriated prior to January 1, 1993.

16 U.S.C. 466(c), Authorization of appropriations

(c) Except as provided by subsection (a) of this section, there is authorized to be appropriated for carrying out the purposes of sections 1 to 7 of this Act such sums as the Congress may from time to time determine.

16 U.S.C. 467, Conflict of laws

Section 7

The provisions of sections 1 to 7 of this Act shall control if any of them are in conflict with any other Act or Acts relating to the same subject matter.

APPENDIX C

National Historic Preservation Act and Associated Regulations

National Historic Preservation Act of 1966
(as amended through 2006)

National Historic Preservation Act of 1966,
As amended through 2006
[With annotations]

[This Act became law on October 15, 1966 (Public Law 89-665; 16 U.S.C. 470 et seq.). Subsequent amendments to the Act include Public Law 91-243, Public Law 93-54, Public Law 94-422, Public Law 94-458, Public Law 96-199, Public Law 96-244, Public Law 96-515, Public Law 98-483, Public Law 99-514, Public Law 100-127, Public Law 102-575, Public Law 103-437, Public Law 104-333, Public Law 106-113, Public Law 106-176, Public Law 106-208, Public Law 106-355, and Public Law 109-453. This description of the Act, as amended, tracts the language of the United States Code except that (in following common usage) we refer to the "Act"(meaning the Act, as amended) rather than to the "subchapter" or the "title" of the Code. This description also excludes some of the notes found in the Code as well as those sections of the amendments dealing with completed reports. Until the Code is updated through the end of the 106th Congress, the Code citations for Sections 308 and 309 are speculative.]

AN ACT to Establish a Program for the Preservation of Additional Historic Properties throughout the Nation, and for Other Purposes.

Section 1

[16 U.S.C. 470 — Short title of the Act]

(a) This Act may be cited as the "National Historic Preservation Act".

[Purpose of the Act]

(b) The Congress finds and declares that —

(1) the spirit and direction of the Nation are founded upon and reflected in its historic heritage;

(2) the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people;

(3) historic properties significant to the Nation's heritage are being lost or substantially altered, often inadvertently, with increasing frequency;

(4) the preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans;

(5) in the face of ever-increasing extensions of urban centers, highways, and residential, commercial, and industrial developments, the present governmental and nongovernmental historic preservation programs and activities are inadequate to insure future generations a genuine opportunity to appreciate and enjoy the rich heritage of our Nation;

(6) the increased knowledge of our historic resources, the establishment of better means of identifying and administering them, and the encouragement of their preservation will improve the planning and execution of Federal and federally assisted projects and will assist economic growth and development; and

(7) although the major burdens of historic preservation have been borne and major efforts initiated by private agencies and individuals, and both should continue to play a vital role, it is

nevertheless necessary and appropriate for the Federal Government to accelerate its historic preservation programs and activities, to give maximum encouragement to agencies and individuals undertaking preservation by private means, and to assist State and local governments and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

Section 2

[16 U.S.C. 470-1 — Declaration of policy of the Federal Government]

It shall be the policy of the Federal Government, in cooperation with other nations and in partnership with the States, local governments, Indian tribes, and private organizations and individuals to —

(1) use measures, including financial and technical assistance, to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations;

(2) provide leadership in the preservation of the prehistoric and historic resources of the United States and of the international community of nations and in the administration of the national preservation program in partnership with States, Indian tribes, Native Hawaiians, and local governments;

(3) administer federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations;

(4) contribute to the preservation of nonfederally owned prehistoric and historic resources and give maximum encouragement to organizations and individuals undertaking preservation by private means;

(5) encourage the public and private preservation and utilization of all usable elements of the Nation's historic built environment; and

(6) assist State and local governments, Indian tribes and Native Hawaiian organizations and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

TITLE I

Section 101

[16 U.S.C. 470a(a) — National Register of Historic Places, expansion and maintenance]

(a) (1) (A) The Secretary of the Interior is authorized to expand and maintain a National Register of Historic Places composed of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture. Notwithstanding section 1125(c) of Title 15 [of the U.S. Code], buildings and structures on or eligible for inclusion on the National Register of Historic Places (either individually or as part of a historic district), or designated as an individual landmark or as a contributing building in a historic district by a unit of State or local government, may retain the name historically associated with the building or structure.

[National Historic Landmarks, designation]

(B) Properties meeting the criteria for National Historic Landmarks established pursuant to paragraph (2) shall be designated as "National Historic Landmarks" and included on the National Register, subject to the requirements of paragraph (6). All historic properties included on the National Register on December 12, 1980 [the date of enactment of the National Historic Preservation Act Amendments of 1980], shall be deemed to be included on the National Register as of their initial listing for purposes of this Act. All historic properties listed in the Federal Register of February 6, 1979, as "National Historic Landmarks" or thereafter prior to the effective date of this Act are declared by Congress to be National historic Landmarks of national historic significance as of their initial listing as such in the Federal Register for purposes of this Act and the Act of August 21, 1935 (49 Stat.666) [16 U.S.C. 461 to 467]; except that in cases of National Historic Landmark districts for which no boundaries have been established, boundaries must first be published in the Federal Register.

[Criteria for National Register and National Historic Landmarks and regulations]

(2) The Secretary in consultation with national historic and archaeological associations, shall establish or revise criteria for properties to be included on the National Register and criteria for National Historic Landmarks, and shall also promulgate or revise regulations as may be necessary for —

(A) nominating properties for inclusion in, and removal from, the National Register and the recommendation of properties by certified local governments;

(B) designating properties as National Historic Landmarks and removing such designation;

(C) considering appeals from such recommendations, nomination, removals, and designations (or any failure or refusal by a nominating authority to nominate or designate);

(D) nominating historic properties for inclusion in the World Heritage List in accordance with the terms of the Convention concerning the Protection of the World Cultural and Natural Heritage;

(E) making determinations of eligibility of properties for inclusion on the National Register; and

(F) notifying the owner of a property, any appropriate local governments, and the general public, when the property is being considered for inclusion on the National Register, for designation as a National Historic Landmark or for nomination to the World Heritage List.

[Nominations to the National Register]

(3) Subject to the requirements of paragraph (6), any State which is carrying out a program approved under subsection (b) of this section, shall nominate to the Secretary properties which meet the criteria promulgated under subsection (a) of this section for inclusion on the National Register. Subject to paragraph (6), any property nominated under this paragraph or under section 110 (a)(2) of this Act shall be included on the National Register on the date forty-five days after receipt by the Secretary of the nomination and the necessary documentation, unless

the Secretary disapproves such nomination within such forty-five day period or unless an appeal is filed under paragraph (5).

[Nominations from individuals and local governments]

(4) Subject to the requirements of paragraph (6) the Secretary may accept a nomination directly from any person or local government for inclusion of a property on the National Register only if such property is located in a State where there is no program approved under subsection (b) of this section. The Secretary may include on the National Register any property for which such a nomination is made if he determines that such property is eligible in accordance with the regulations promulgated under paragraph (2). Such determinations shall be made within ninety days from the date of nomination unless the nomination is appealed under paragraph (5).

[Appeals of nominations]

(5) Any person or local government may appeal to the Secretary a nomination of any historic property for inclusion on the National Register and may appeal to the Secretary the failure or refusal of a nominating authority to nominate a property in accordance with this subsection.

[Owner participation in nomination process]

(6) The Secretary shall promulgate regulations requiring that before any property or district may be included on the National Register or designated as a National Historic Landmark, the owner or owners of such property, or a majority of the owners of the properties within the district in the case of an historic district, shall be given the opportunity (including a reasonable period of time) to concur in, or object to, the nomination of the property or district for such inclusion or designation. If the owner or owners of any privately owned property, or a majority of the owners of such properties within the district in the case of an historic district, object to such inclusion or designation, such property shall not be included on the National Register or designated as a National Historic Landmark until such objection is withdrawn. The Secretary shall review the nomination of the property or district where any such objection has been made and shall determine whether or not the property or district is eligible for such inclusion or designation, and if the Secretary determines that such property or district is eligible for such inclusion or designation, he shall inform the Advisory Council on Historic Preservation, the appropriate State Historic Preservation Officer, the appropriate chief elected local official and the owner or owners of such property, of his determination. The regulations under this paragraph shall include provisions to carry out the purposes of this paragraph in the case of multiple ownership of a single property.

[Regulations for curation, documentation, and local government certification]

(7) The Secretary shall promulgate, or revise, regulations —

(A) ensuring that significant prehistoric and historic artifacts, and associated records, subject to section 110 of this Act [16 U.S.C. 470h-2], the Act of June 27, 1960 (16 U.S.C. 469c), and the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa and following) are deposited in an institution with adequate long-term curatorial capabilities;

(B) establishing a uniform process and standards for documenting historic properties by public agencies and private parties for purposes of incorporation into, or

complementing, the national historic architectural and engineering records within the Library of Congress; and

(C) certifying local governments, in accordance with subsection (c)(1) of this section and for the allocation of funds pursuant to section 103 (c) of this Act [16 U.S.C. 470c(c)].

[Review threats to eligible and listed properties and recommend action]

(8) The Secretary shall, at least once every 4 years, in consultation with the Council and with State Historic Preservation Officers, review significant threats to properties included in, or eligible for inclusion on, the National Register, in order to —

(A) determine the kinds of properties that may be threatened;

(B) ascertain the causes of the threats; and

(C) develop and submit to the President and Congress recommendations for appropriate action.

[16 U.S.C. 470a(b) — State Historic Preservation Programs]

(b) (1) The Secretary, in consultation with the National Conference of State Historic Preservation Officers and the National Trust for Historic Preservation, shall promulgate or revise regulations for State Historic Preservation Programs. Such regulations shall provide that a State program submitted to the Secretary under this section shall be approved by the Secretary if he determines that the program —

[Designation of the State Historic Preservation Officer (SHPO)]

(A) provides for the designation and appointment by the Governor of a "State Historic Preservation Officer" to administer such program in accordance with paragraph (3) and for the employment or appointment by such officer of such professionally qualified staff as may be necessary for such purposes;

[Designation of the State Review Board]

(B) provides for an adequate and qualified State historic preservation review board designated by the State Historic Preservation Officer unless otherwise provided for by State law; and

(C) provides for adequate public participation in the State Historic Preservation Program, including the process of recommending properties for nomination to the National Register.

[Review of State programs]

(2) (A) Periodically, but not less than every 4 years after the approval of any State program under this subsection, the Secretary, in consultation with the Council on the appropriate provisions of this Act, and in cooperation with the State Historic Preservation Officer, shall evaluate the program to determine whether it is consistent with this Act.

(B) If, at any time, the Secretary determines that a major aspect of a State program is not consistent with this Act, the Secretary shall disapprove the program and suspend in whole or in part any contracts or cooperative agreements with the State and the State Historic Preservation Officer under this Act, until the program is consistent with this Act, unless the Secretary determines that the program will be made consistent with this Act within a reasonable period of time.

(C) The Secretary, in consultation with State Historic Preservation Officers, shall establish oversight methods to ensure State program consistency and quality without imposing undue review burdens on State Historic Preservation Officers.

(D) At the discretion of the Secretary, a State system of fiscal audit and management may be substituted for comparable Federal systems so long as the State system —

(i) establishes and maintains substantially similar accountability standards; and

(ii) provides for independent professional peer review.

The Secretary may also conduct periodic fiscal audits of State programs approved under this section as needed and shall ensure that such programs meet applicable accountability standards.

[SHPO responsibilities]

(3) It shall be the responsibility of the State Historic Preservation Officer to administer the State Historic Preservation Program and to —

(A) in cooperation with Federal and State agencies, local governments, and private organizations and individuals, direct and conduct a comprehensive statewide survey of historic properties and maintain inventories of such properties;

(B) identify and nominate eligible properties to the National Register and otherwise administer applications for listing historic properties on the National Register;

(C) prepare and implement a comprehensive statewide historic preservation plan;

(D) administer the State program of Federal assistance for historic preservation within the State;

(E) advise and assist, as appropriate, Federal and State agencies and local governments in carrying out their historic preservation responsibilities;

(F) cooperate with the Secretary, the Advisory Council on Historic Preservation, and other Federal and State agencies, local governments, and organizations and individuals to ensure that historic properties are taken into consideration at all levels of planning and development;

(G) provide public information, education, and training, and technical assistance in historic preservation;

(H) cooperate with local governments in the development of local historic preservation programs and assist local governments in becoming certified pursuant to subsection (c) of this section;

(I) consult with the appropriate Federal agencies in accordance with this Act on —

(i) Federal undertakings that may affect historic properties; and

(ii) the content and sufficiency of any plans developed to protect, manage, or to reduce or mitigate harm to such properties; and

(J) advise and assist in the evaluation of proposals for rehabilitation projects that may qualify for Federal assistance.

[Arrangements with nonprofit organizations]

(4) Any State may carry out all or any part of its responsibilities under this subsection by contract or cooperative agreement with any qualified nonprofit organization or educational institution.

[Approval of existing programs]

(5) Any State historic preservation program in effect under prior authority of law may be treated as an approved program for purposes of this subsection until the earlier of —

(A) the date on which the Secretary approves a program submitted by the State under this subsection, or

(B) three years after October 30, 1992 [the date of the enactment of the National Historic Preservation Act Amendments of 1992].

[Contracts or cooperative agreements with State Historic Preservation Officers]

(6) (A) Subject to subparagraphs (C) and (D), the Secretary may enter into contracts or cooperative agreements with a State Historic Preservation Officer for any State authorizing such Officer to assist the Secretary in carrying out one or more of the following responsibilities within that State —

(i) Identification and preservation of historic properties.

(ii) Determination of the eligibility of properties for listing on the National Register.

(iii) Preparation of nominations for inclusion on the National Register.

(iv) Maintenance of historical and archaeological data bases.

(v) Evaluation of eligibility for Federal preservation incentives.

Nothing in this paragraph shall be construed to provide that any State Historic Preservation Officer or any other person other than the Secretary shall have the authority to maintain the National Register for properties in any State.

(B) The Secretary may enter into a contract or cooperative agreement under subparagraph (A) only if —

(i) the State Historic Preservation Officer has requested the additional responsibility;

(ii) the Secretary has approved the State historic preservation program pursuant to subsection (b)(1) and (2) of this section;

(iii) the State Historic Preservation Officer agrees to carry out the additional responsibility in a timely and efficient manner acceptable to the Secretary and the Secretary determines that such Officer is fully capable of carrying out such responsibility in such manner;

(iv) the State Historic Preservation Officer agrees to permit the Secretary to review and revise, as appropriate in the discretion of the Secretary, decisions made by the Officer pursuant to such contract or cooperative agreement; and

(v) the Secretary and the State Historic Preservation Officer agree on the terms of additional financial assistance to the State, if there is to be any, for the costs of carrying out such responsibility.

(C) For each significant program area under the Secretary's authority, the Secretary shall establish specific conditions and criteria essential for the assumption by State Historic Preservation Officers of the Secretary's duties in each such program.

(D) Nothing in this subsection shall have the effect of diminishing the preservation programs and activities of the National Park Service.

[16 U.S.C. 470a(c) — Certification of local governments]

(c) (1) Any State program approved under this section shall provide a mechanism for the certification by the State Historic Preservation Officer of local governments to carry out the purposes of this Act and provide for the transfer, in accordance with section 103(c) of this Act [16 U.S.C. 470c(c)], of a portion of the grants received by the States under this Act, to such local governments. Any local government shall be certified to participate under the provisions of this section if the applicable State Historic Preservation Officer, and the Secretary, certifies that the local government —

(A) enforces appropriate State or local legislation for the designation and protection of historic properties;

(B) has established an adequate and qualified historic preservation review commission by State or local legislation;

(C) maintains a system for the survey and inventory of historic properties that furthers the purposes of subsection (b) of this section;

(D) provides for adequate public participation in the local historic preservation program, including the process of recommending properties for nomination to the National Register; and

(E) satisfactorily performs the responsibilities delegated to it under this Act.

Where there is no approved State program, a local government may be certified by the Secretary if he determines that such local government meets the requirements of subparagraphs (A) through (E); and in any such case the Secretary may make grants-in-aid to the local government for purposes of this section.

[Participation of certified local governments in National Register nominations]

(2) (A) Before a property within the jurisdiction of the certified local government may be considered by the State to be nominated to the Secretary for inclusion on the National Register, the State Historic Preservation Officer shall notify the owner, the applicable chief local elected official, and the local historic preservation commission. The commission, after reasonable opportunity for public comment, shall prepare a report as to whether or not such property, in its opinion, meets the criteria of the National Register. Within sixty days of notice from the State Historic Preservation Officer, the chief local elected official shall transmit the report of the commission and his recommendation to the state Historic Preservation Officer. Except as provided in subparagraph (B), after receipt of such report and recommendation, or if no such report and recommendation are received within sixty days, the State shall make the nomination pursuant to subsection (a) of this subsection. The State may expedite such process with the concurrence of the certified local government.

(B) If both the commission and the chief local elected official recommend that a property not be nominated to the National Register, the State Historic Preservation Officer shall take no further action, unless within thirty days of the receipt of such recommendation by the State Historic Preservation Officer an appeal is filed with the State. If such an appeal is filed, the State shall follow the procedures for making a nomination pursuant to subsection (a) of this section. Any report and recommendations made under this section shall be included with any nomination submitted by the State to the Secretary.

(3) Any local government certified under this section or which is making efforts to become so certified shall be eligible for funds under the provision of section 103 (c) of this Act [16 U.S.C. 470c(c)], and shall carry out any responsibilities delegated to it in accordance with such terms and conditions as the Secretary deems necessary or advisable.

[Definitions]

(4) For the purposes of this section the term —

(A) **"designation"** means the identification and registration of properties for protection that meet criteria established by the State or the locality for significant historic and prehistoric resources within the jurisdiction of a local government; and

(B) **"protection"** means a local review process under State or local law for proposed demolition of, changes to, or other action that may affect historic properties designated pursuant to this subsection.

[16 U.S.C. 470a(d) — Establish program and regulations to assist Indian tribes]

(d) (1) (A) The Secretary shall establish a program and promulgate regulations to assist Indian tribes in preserving their particular historic properties. The Secretary shall foster

communication and cooperation between Indian tribes and State Historic Preservation Officers in the administration of the national historic preservation program to ensure that all types of historic properties and all public interests in such properties are given due consideration, and to encourage coordination among Indian tribes, State Historic Preservation Officers, and Federal agencies in historic preservation planning and in the identification, evaluation, protection, and interpretation of historic properties.

(B) The program under subparagraph (A) shall be developed in such a manner as to ensure that tribal values are taken into account to the extent feasible. The Secretary may waive or modify requirements of this section to conform to the cultural setting of tribal heritage preservation goals and objectives. The tribal programs implemented by specific tribal organizations may vary in scope, as determined by each tribe's chief governing authority.

(C) The Secretary shall consult with Indian tribes, other Federal agencies, State Historic Preservation Officers, and other interested parties and initiate the program under subparagraph (A) by not later than October 1, 1994.

[Indian Tribes may assume State Historic Preservation Officer functions]

(2) A tribe may assume all or any part of the functions of a State Historic Preservation Officer in accordance with subsections (b)(2) and (b)(3) of this section, with respect to tribal lands, as such responsibilities may be modified for tribal programs through regulations issued by the Secretary if —

(A) the tribe's chief governing authority so requests;

(B) the tribe designates a tribal preservation official to administer the tribal historic preservation program, through appointment by the tribe's chief governing authority or as a tribal ordinance may otherwise provide;

(C) the tribal preservation official provides the Secretary with a plan describing how the functions the tribal preservation official proposes to assume will be carried out;

(D) the Secretary determines, after consultation with the tribe, the appropriate State Historic Preservation Officer, the Council (if the tribe proposes to assume the functions of the State Historic Preservation Officer with respect to review of undertakings under section 106 of this Act), and other tribes, if any, whose tribal or aboriginal lands may be affected by conduct of the tribal preservation program —

(i) that the tribal preservation program is fully capable of carrying out the functions specified in the plan provided under subparagraph (C);

(ii) that the plan defines the remaining responsibilities of the Secretary and the State Historic Preservation Officer; and

(iii) that the plan provides, with respect to properties neither owned by a member of the tribe nor held in trust by the Secretary for the benefit of the tribe, at the request of the owner thereof, the State Historic Preservation Officer, in addition to the tribal preservation official, may exercise the historic preservation responsibilities in accordance with subsections (b)(2) and (b)(3) of this section; and

(E) based on satisfaction of the conditions stated in subparagraphs (A), (B), (C), and (D), the Secretary approves the plan.

(3) In consultation with interested Indian tribes, other Native American organizations and affected State Historic Preservation Officers, the Secretary shall establish and implement procedures for carrying out section 103(a) of this Act with respect to tribal programs that assume responsibilities under paragraph (2).

(4) At the request of a tribe whose preservation program has been approved to assume functions and responsibilities pursuant to paragraph (2), the Secretary shall enter into contracts or cooperative agreements with such tribe permitting the assumption by the tribe of any part of the responsibilities referred to in subsection (b)(6) of this section on tribal land, if —

(A) the Secretary and the tribe agree on additional financial assistance, if any, to the tribe for the costs of carrying out such authorities;

(B) the Secretary finds that the tribal historic preservation program has been demonstrated to be sufficient to carry out the contract or cooperative agreement and this Act; and

(C) the contract or cooperative agreement specifies the continuing responsibilities of the Secretary or of the appropriate State Historic Preservation Officers and provides for appropriate participation by —

(i) the tribe's traditional cultural authorities;

(ii) representatives of other tribes whose traditional lands are under the jurisdiction of the tribe assuming responsibilities; and

(iii) the interested public.

(5) The Council may enter into an agreement with an Indian tribe to permit undertakings on tribal land to be reviewed under tribal historic preservation regulations in place of review under regulations promulgated by the Council to govern compliance with section 106 of this Act, if the Council, after consultation with the tribe and appropriate State Historic Preservation Officers, determines that the tribal preservation regulations will afford historic properties consideration equivalent to those afforded by the Council's regulations.

[Traditional religious and cultural properties may be eligible for listing in the National Register]

(6) (A) Properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined to be eligible for inclusion on the National Register.

(B) In carrying out its responsibilities under section 106 of this Act, a Federal agency shall consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to properties described in subparagraph (A).

(C) In carrying out his or her responsibilities under subsection (b)(3) of this section, the State Historic Preservation Officer for the State of Hawaii shall —

(i) consult with Native Hawaiian organizations in assessing the cultural

significance of any property in determining whether to nominate such property to the National Register;

(ii) consult with Native Hawaiian organizations in developing the cultural component of a preservation program or plan for such property; and

(iii) enter into a memorandum of understanding or agreement with Native Hawaiian organizations for the assessment of the cultural significance of a property in determining whether to nominate such property to the National Register and to carry out the cultural component of such preservation program or plan.

[16 U.S.C. 470a(e) — Grants to States]

(e) (1) The Secretary shall administer a program of matching grants to the States for the purposes of carrying out this Act.

[Grants to the National Trust]

(2) The Secretary may administer grants to the National Trust for Historic Preservation in the United States, chartered by Act of Congress approved October 26, 1949 (63 Stat. 927) [16 U.S.C. 468], consistent with the purposes of its charter and this Act.

[Direct grants for threatened National Historic Landmarks, demonstration projects, training, and displacement prevention]

(3) (A) In addition to the programs under paragraphs (1) and (2), the Secretary shall administer a program of direct grants for the preservation of properties included on the National Register. Funds to support such program annually shall not exceed 10 per centum of the amount appropriated annually for the fund established under section 108 of this Act. These grants may be made by the Secretary, in consultation with the appropriate State Historic Preservation Officer —

(i) for the preservation of National Historic Landmarks which are threatened with demolition or impairment and for the preservation of historic properties of World Heritage significance,

(ii) for demonstration projects which will provide information concerning professional methods and techniques having application to historic properties,

(iii) for the training and development of skilled labor in trades and crafts, and in analysis and curation, relating to historic preservation, and

(iv) to assist persons or small businesses within any historic district included in the National Register to remain within the district.

[Grants or loans to Indian tribes and non-profit ethnic or minority organizations for preserving cultural heritage]

(B) The Secretary may also, in consultation with the appropriate State Historic Preservation Officer, make grants or loans or both under this section to Indian tribes

and to nonprofit organizations representing ethnic or minority groups for the preservation of their cultural heritage.

(C) Grants may be made under subparagraph (A)(i) and (iv) only to the extent that the project cannot be carried out in as effective a manner through the use of an insured loan under section 104 of this Act.

[Grants for religious properties]

(4) Grants may be made under this subsection for the preservation, stabilization, restoration, or rehabilitation of religious properties listed in the National Register of Historic Places, provided that the purpose of the grant is secular, does not promote religion, and seeks to protect those qualities that are historically significant. Nothing in this paragraph shall be construed to authorize the use of any funds made available under this section for the acquisition of any property referred to in the preceding sentence.

[Direct grants to Indian tribes and Native Hawaiian organizations]

(5) The Secretary shall administer a program of direct grants to Indian tribes and Native Hawaiian organizations for the purpose of carrying out this Act as it pertains to Indian tribes and Native Hawaiian organizations. Matching fund requirements may be modified. Federal funds available to a tribe or Native Hawaiian organization may be used as matching funds for the purposes of the tribe's or organization's conducting its responsibilities pursuant to this section.

[Direct grants to Micronesia, Marshall Islands, and Palau]

(6) (A) As a part of the program of matching grant assistance from the Historic Preservation Fund to States, the Secretary shall administer a program of direct grants to the Federated States of Micronesia, the Republic of the Marshall Islands, the Trust Territory of the Pacific Islands, and upon termination of the Trusteeship Agreement for the Trust Territory of the Pacific Islands, the Republic of Palau (referred to as the Micronesian States) in furtherance of the Compact of Free Association between the United States and the Federated States of Micronesia and the Marshall Islands, approved by the Compact of Free Association Act of 1985 (48 U.S.C. 1681 note), the Trusteeship Agreement for the Trust Territory of the Pacific Islands, and the Compact of Free Association between the United States and Palau, approved by the Joint Resolution entitled "Joint Resolution to approve the 'Compact of Free Association' between the United States and Government of Palau, and for other purposes" (48 U.S.C. 1681 note). The goal of the program shall be to establish historic and cultural preservation programs that meet the unique needs of each Micronesian State so that at the termination of the compacts the programs shall be firmly established. The Secretary may waive or modify the requirements of this section to conform to the cultural setting of those nations.

(B) The amounts to be made available to the Micronesian States shall be allocated by the Secretary on the basis of needs as determined by the Secretary. Matching funds may be waived or modified.

[16 U.S.C. 470a(f) — Prohibition on compensating intervenors]

(f) No part of any grant made under this section may be used to compensate any person intervening in any proceeding under this Act.

[16 U.S.C. 470a(g) — Guidelines for Federal agency responsibilities]

(g) In consultation with the Advisory Council on Historic Preservation, the Secretary shall promulgate guidelines for Federal agency responsibilities under section 110 of this Act.

[16 U.S.C. 470a(h) — Preservation standards for federally owned properties]

(h) Within one year after December 12, 1980 [the date of enactment of the National Historic Preservation Act Amendments of 1980], the Secretary shall establish, in consultation with the Secretaries of Agriculture and Defense, the Smithsonian Institution, and the Administrator of the General Services Administration, professional standards for the preservation of historic properties in Federal ownership or control.

[16 U.S.C. 470a(i) — Technical advice]

(i) The Secretary shall develop and make available to Federal agencies, State and local governments, private organizations and individuals, and other nations and international organizations pursuant to the World Heritage Convention, training in, and information concerning, professional methods and techniques for the preservation of historic properties and for the administration of the historic preservation program at the Federal, State, and local level. The Secretary shall also develop mechanisms to provide information concerning historic preservation to the general public including students.

[16 U.S.C. 470a(j) — Develop and implement a comprehensive preservation education and training program]

(j) (1) The Secretary shall, in consultation with the Council and other appropriate Federal, tribal, Native Hawaiian, and non-Federal organizations, develop and implement a comprehensive preservation education and training program.

(2) The education and training program described in paragraph (1) shall include —

(A) new standards and increased preservation training opportunities for Federal workers involved in preservation-related functions;

(B) increased preservation training opportunities for other Federal, State, tribal and local government workers, and students;

(C) technical or financial assistance, or both, to historically black colleges and universities, to tribal colleges, and to colleges with a high enrollment of Native Americans or Native Hawaiians, to establish preservation training and degree programs; and

(D) coordination of the following activities, where appropriate, with the National Center for Preservation Technology and Training —

(i) distribution of information on preservation technologies;

(ii) provision of training and skill development in trades, crafts, and disciplines related to historic preservation in Federal training and development programs; and

(iii) support for research, analysis, conservation, curation, interpretation, and display related to preservation.

Section 102

[16 U.S.C. 470b(a) — Grant requirements]

(a) No grant may be made under this Act —

(1) unless application therefore is submitted to the Secretary in accordance with regulations and procedures prescribed by him;

(2) unless the application is in accordance with the comprehensive statewide historic preservation plan which has been approved by the Secretary after considering its relationship to the comprehensive statewide outdoor recreation plan prepared pursuant to the Land and Water Conservation Fund Act of 1965 (78 Stat. 897) [16 U.S.C. 460l-4];

(3) for more than 60 percent of the aggregate costs of carrying out projects and programs under the administrative control of the State Historic Preservation Officer as specified in section 101(b)(3) of this Act in any one fiscal year;

(4) unless the grantee has agreed to make such reports, in such form and containing such information as the Secretary may from time to time require;

(5) unless the grantee has agreed to assume, after completion of the project, the total cost of the continued maintenance, repair, and administration of the property in a manner satisfactory to the Secretary; and

(6) until the grantee has complied with such further terms and conditions as the Secretary may deem necessary or advisable.

Except as permitted by other law, the State share of the costs referred to in paragraph (3) shall be contributed by non-Federal sources. Notwithstanding any other provision of law, no grant made pursuant to this Act shall be treated as taxable income for purposes of the Internal Revenue Code of 1986 [Title 26 of the U.S. Code].

[16 U.S.C. 470b(b) — Waiver for the National Trust]

(b) The Secretary may in his discretion waive the requirements of subsection (a), paragraphs (2) and (5) of this section for any grant under this Act to the National Trust for Historic Preservation in the United States.

[16 U.S.C. 470b(c) — State limitation on matching]*
*[*Technically, subsection (c) was repealed and replaced by two subsection "d"s]*

(c*) No State shall be permitted to utilize the value of real property obtained before October 15, 1966 [the date of approval of this Act], in meeting the remaining cost of a project for which a grant is made under this Act.

[16 U.S.C. 470b(d) — Availability of funds]

(d) The Secretary shall make funding available to individual States and the National Trust for Historic Preservation as soon as practicable after execution of a grant agreement. For purposes of administration, grants to individual States and the National Trust each shall be considered to be one grant and shall be administered by the National Park Service as such.

[16 U.S.C. 470b(e) — Administrative Costs]

(e) The total administrative costs, direct and indirect, charged for carrying out State projects and programs may not exceed 25 percent of the aggregate costs except in the case of grants under section 101(e)(6) of this Act.

Section 103

[16 U.S.C. 470c(a) — Basis for apportionment of grants]

(a) The amounts appropriated and made available for grants to the States for the purposes of this Act shall be apportioned among the States by the Secretary on the basis of needs as determined by him.

[16 U.S.C. 470c(b) — Apportionment basis, notice, reapportionment, etc.]

(b) The amounts appropriated and made available for grants to the States for projects and programs under this Act for each fiscal year shall be apportioned among the States as the Secretary determines to be appropriate.

The Secretary shall notify each State of its apportionment under this subsection within thirty days following the date of enactment of legislation appropriating funds under this Act. Any amount of any apportionment that has not been paid or obligated by the Secretary during the fiscal year in which such notification is given and for two fiscal years thereafter, shall be reapportioned by the Secretary in accordance with this subsection. The Secretary shall analyze and revise as necessary the method of apportionment. Such method and any revision thereof shall be published by the Secretary in the Federal Register.

[16 U.S.C. 470c(c) — Requirements for certified local government pass-through subgrants]

(c) A minimum of 10 per centum of the annual apportionment distributed by the Secretary to each State for the purposes of carrying out this Act shall be transferred by the State, pursuant to the requirements of this Act, to local governments which are certified under section 101(c) of this Act for historic preservation projects or programs of such local governments. In any year in which the total annual apportionment to the States exceeds $65,000,000, one half of the excess shall also be transferred by the States to local governments certified pursuant to section 101(c) of this Act.

[16 U.S.C. 470c(d) — Guidelines for State distribution to certified local governments]

(d) The Secretary shall establish guidelines for the use and distribution of funds under subsection (c) of this section to insure that no local government receives a disproportionate share of the funds available, and may include a maximum or minimum limitation on the amount of funds distributed to any single local government. The guidelines shall not limit the ability of any State to distribute more than 10 per centum of its annual apportionment under subsection (c) of this section, nor shall the Secretary require any State to exceed the 10 per centum minimum distribution to local governments.

Section 104

[16 U.S.C. 470d(a) — Insured loans for National Register]

(a) The Secretary shall establish and maintain a program by which he may, upon application of a private lender, insure loans (including loans made in accordance with a mortgage) made by such lender to finance any project for the preservation of a property included on the National Register.

[16 U.S.C. 470d(b) — Requirements]

(b) A loan may be insured under this section only if —

(1) the loan is made by a private lender approved by the Secretary as financially sound and able to service the loan properly;

(2) the amount of the loan, and interest rate charged with respect to the loan, do not exceed such amount, and such a rate, as is established by the Secretary, by rule;

(3) the Secretary has consulted the appropriate State Historic Preservation Officer concerning the preservation of the historic property;

(4) the Secretary has determined that the loan is adequately secured and there is reasonable assurance of repayment;

(5) the repayment period of the loan does not exceed the lesser of forty years or the expected life of the asset financed;

(6) the amount insured with respect to such loan does not exceed 90 per centum of the loss sustained by the lender with respect to the loan; and

(7) the loan, the borrower, and the historic property to be preserved meet other terms and conditions as may be prescribed by the Secretary, by rule, especially terms and conditions relating to the nature and quality of the preservation work.

[Interest rates]

The Secretary shall consult with the Secretary of the Treasury regarding the interest rate of loans insured under this section.

[16 U.S.C. 470d(c) — Limitation on loan authority]

(c) The aggregate unpaid principal balance of loans insured under this section and outstanding at any one time may not exceed the amount which has been covered into the Historic Preservation Fund pursuant to section 108 of this Act and subsections (g) and (i) of this section, as in effect on December 12, 1980 [the date of the enactment of the Act], but which has not been appropriated for any purpose.

[16 U.S.C. 470d(d) — Assignability and effect]

(d) Any contract of insurance executed by the Secretary under this section may be assignable, shall be an obligation supported by the full faith and credit of the United States, and shall be incontestable except for fraud or misrepresentation of which the holder had actual knowledge at the time it became a holder.

[16 U.S.C. 470d(e) — Method of payment for losses]

(e) The Secretary shall specify, by rule and in each contract entered into under this section, the conditions and method of payment to a private lender as a result of losses incurred by the lender on any loan insured under this section.

[16 U.S.C. 470d(f) — Protection of Government's financial interests; foreclosure]

(f) In entering into any contract to insure a loan under this section, the Secretary shall take steps to assure adequate protection of the financial interests of the Federal Government. The Secretary may —

(1) in connection with any foreclosure proceeding, obtain, on behalf of the Federal Government, the property securing a loan insured under this title; and

(2) operate or lease such property for such period as may be necessary to protect the interest of the Federal Government and to carry out subsection (g) of this section.

[16 U.S.C. 470d(g) — Conveyance of foreclosed property]

(g) (1) In any case in which a historic property is obtained pursuant to subsection (f) of this section, the Secretary shall attempt to convey such property to any governmental or nongovernmental entity under such conditions as will ensure the property's continued preservation and use; except that if, after a reasonable time, the Secretary, in consultation with the Advisory Council on Historic Preservation, determines that there is no feasible and prudent means to convey such property and to ensure its continued preservation and use, then the Secretary may convey the property at the fair market value of its interest in such property to any entity without restriction.

(2) Any funds obtained by the Secretary in connection with the conveyance of any property pursuant to paragraph (1) shall be covered into the historic preservation fund, in addition to the amounts covered into such fund pursuant to section 108 of this Act and subsection (i) of this section, and shall remain available in such fund until appropriated by the Congress to carry out the purposes of this Act.

[16 U.S.C. 470d(h) — Fees]

(h) The Secretary may assess appropriate and reasonable fees in connection with insuring loans under this section. Any such fees shall be covered into the Historic Preservation Fund, in addition to the amounts covered into such fund pursuant to section 108 of this Act and subsection (g) of this section, and shall remain available in such fund until appropriated by the Congress to carry out the purposes of this Act.

[16 U.S.C. 470d(i) — Loans to be considered non-Federal funds]

(i) Notwithstanding any other provision of law, any loan insured under this section shall be treated as non-Federal funds for the purposes of satisfying any requirement of any other provision of law under which Federal funds to be used for any project or activity are conditioned upon the use of non-Federal funds by the recipient for payment of any portion of the costs of such project or activity.

[16 U.S.C. 470d(j) — Appropriation authorization]

(j) Effective after the fiscal year 1981 there are authorized to be appropriated, such sums as may be necessary to cover payments incurred pursuant to subsection (e) of this section.

[16 U.S.C. 470d(k) — Prohibition against acquisition by Federal Financing Bank]

(k) No debt obligation which is made or committed to be made, or which is insured or committed to be insured, by the Secretary under this section shall be eligible for purchase by, or commitment to purchase by, or sale or issuance to, the Federal Financing Bank.

Section 105

[16 U.S.C. 470e — Recordkeeping]

The beneficiary of assistance under this Act shall keep such records as the Secretary shall prescribe, including records which fully disclose the disposition by the beneficiary of the proceeds of such assistance, the total cost of the project or undertaking in connection with which such assistance is given or used, and the amount and nature of that portion of the cost of the project or undertaking supplied by other sources, and such other records as will facilitate an effective audit.

Section 106

[16 U.S.C. 470f — Advisory Council on Historic Preservation, comment on Federal undertakings]

The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking.

Section 107

[16 U.S.C. 470g — Exemption of White House, Supreme Court, and Capitol]

Nothing in this Act shall be construed to be applicable to the White House and its grounds, the Supreme Court building and its grounds, or the United States Capitol and its related buildings and grounds.

Section 108

[16 U.S.C. 470h — Establishment of Historic Preservation Fund; authorization for appropriations]

To carry out the provisions of this Act, there is hereby established the Historic Preservation Fund (hereafter referred to as the "fund") in the Treasury of the United States.

There shall be covered into such fund $24,400,000 for fiscal year 1977, $100,000,000 for fiscal year 1978, $100,000,000 for fiscal year 1979, $150,000,000 for fiscal year 1980 and $150,000,000 for fiscal year 1981 and $150,000,000 for each of fiscal years 1982 through 2015, from revenues due and payable to the United States under the Outer Continental Shelf Lands Act (67 Stat. 462, 469) as amended (43 U.S.C. 1338), and/or under section 7433(b) of Title 10, notwithstanding any provision of law that such proceeds shall be credited to miscellaneous receipts of the Treasury. Such moneys shall be used only to carry out the purposes of this Act and shall be available for expenditure only when appropriated by the Congress. Any moneys not appropriated shall remain available in the fund until appropriated for said purposes: *Provided*, That appropriations made pursuant to this paragraph may be made without fiscal year limitation.

Section 109

[16 U.S.C. 470h-1(a) — Donations to the Secretary]

(a) In furtherance of the purposes of this Act, the Secretary may accept the donation of funds which may be expended by him for projects to acquire, restore, preserve, or recover data from any district, building, structure, site, or object which is listed on the National Register of Historic Places established pursuant to section 101 of this Act, so long as the project is owned by a State, any unit of local government, or any nonprofit entity.

[16 U.S.C. 470h-1(b) — Expenditure of donated funds]

(b) In expending said funds, the Secretary shall give due consideration to the following factors: the national significance of the project; its historical value to the community; the imminence of its destruction or loss; and the expressed intentions of the donor. Funds expended under this subsection shall be made available without regard to the matching requirements established by section 102 of this Act, but the recipient of such funds shall be permitted to utilize them to match any grants from the Historic Preservation Fund established by section 108 of this Act.

[16 U.S.C. 470h-1(c) — Transfer of funds donated for the National Park Service]

(c) The Secretary is hereby authorized to transfer unobligated funds previously donated to the Secretary for purposes of the National Park Service, with the consent of the donor, and any funds so transferred shall be used or expended in accordance with the provisions of this Act.

Section 110

[16 U.S.C. 470h-2(a) — Federal agencies' responsibility to preserve and use historic properties]

(a) (1) The heads of all Federal agencies shall assume responsibility for the preservation of historic properties which are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for purposes of carrying out agency responsibilities, each Federal agency shall use, to the maximum extent feasible, historic properties available to the agency in accordance with Executive Order No. 13006, issued May 21, 1996 (61 Fed. Reg. 26071). Each agency shall undertake, consistent with the preservation of such properties and the mission of the agency and the professional standards established pursuant to section 101(g) of this Act, any preservation, as may be necessary to carry out this section.

[Each Federal agency to establish a preservation program to protect and preserve historic properties in consultation with others]

(2) Each Federal agency shall establish (unless exempted pursuant to Section 214) of this Act, in consultation with the Secretary, a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties. Such program shall ensure —

(A) that historic properties under the jurisdiction or control of the agency, are identified, evaluated, and nominated to the National Register;

(B) that such properties under the jurisdiction or control of the agency as are listed in or may be eligible for the National Register are managed and maintained in a way that

considers the preservation of their historic, archaeological, architectural, and cultural values in compliance with section 106 of this Act and gives special consideration to the preservation of such values in the case of properties designated as having National significance;

(C) that the preservation of properties not under the jurisdiction or control of the agency, but subject to be potentially affected by agency actions are given full consideration in planning;

(D) that the agency's preservation-related activities are carried out in consultation with other Federal, State, and local agencies, Indian tribes, Native Hawaiian organizations carrying out historic preservation planning activities, and with the private sector; and

(E) that the agency's procedures for compliance with section 106 of this Act —

(i) are consistent with regulations issued by the Council pursuant to section 211 of this Act;

(ii) provide a process for the identification and evaluation of historic properties for listing in the National Register and the development and implementation of agreements, in consultation with State Historic Preservation Officers, local governments, Indian tribes, Native Hawaiian organizations, and the interested public, as appropriate, regarding the means by which adverse effects on such properties will be considered; and

(iii) provide for the disposition of Native American cultural items from Federal or tribal land in a manner consistent with section 3(c) of the Native American Grave Protection and Repatriation Act (25 U.S.C. 3002(c)).

[16 U.S.C. 470h-2(b) — Recordation of historic properties prior to demolition]

(b) Each Federal agency shall initiate measures to assure that where, as a result of Federal action or assistance carried out by such agency, an historic property is to be substantially altered or demolished, timely steps are taken to make or have made appropriate records, and that such records then be deposited, in accordance with section 101(a) of this Act, in the Library of Congress or with such other appropriate agency as may be designated by the Secretary, for future use and reference.

[16 U.S.C. 470h-2(c) — Designation of Federal agency preservation officers]

(c) The head of each Federal agency shall, unless exempted under section 214 of this Act, designate a qualified official to be known as the agency's "preservation officer" who shall be responsible for coordinating that agency's activities under this Act. Each Preservation Officer may, in order to be considered qualified, satisfactorily complete an appropriate training program established by the Secretary under section 101(h) of this Act.

[16 U.S.C. 470h-2(d) — Conduct of agency programs consistent with Act]

(d) Consistent with the agency's mission and mandates, all Federal agencies shall carry out agency programs and projects (including those under which any Federal assistance is provided or any Federal license, permit, or other approval is required) in accordance with the purposes of this Act and, give consideration to programs and projects which will further the purposes of this Act.

[16 U.S.C. 470h-2(e) — Transfer of surplus Federal historic properties]

(e) The Secretary shall review and approve the plans of transferees of surplus federally owned historic properties not later than ninety days after his receipt of such plans to ensure that the prehistorical, historical, architectural, or culturally significant values will be preserved or enhanced.

[16 U.S.C. 470h-2(f) — Federal undertakings affecting National Historic Landmarks]

(f) Prior to the approval of any Federal undertaking which may directly and adversely affect any National Historic Landmark, the head of the responsible Federal agency shall, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark, and shall afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.

[16 U.S.C. 470h-2(g) — Preservation activities as an eligible project cost]

(g) Each Federal agency may include the costs of preservation activities of such agency under this Act as eligible project costs in all undertakings of such agency or assisted by such agency. The eligible project costs may also include amounts paid by a Federal agency to any State to be used in carrying out such preservation responsibilities of the Federal agency under this Act, and reasonable costs may be charged to Federal licensees and permittees as a condition to the issuance of such license or permit.

[16 U.S.C. 470h-2(h) — Preservation awards program]

(h) The Secretary shall establish an annual preservation awards program under which he may make monetary awards in amounts not to exceed $1,000 and provide citations for special achievements to officers and employees of Federal, State, and certified local governments in recognition of their outstanding contributions to the preservation of historic resources. Such program may include the issuance of annual awards by the President of the United States to any citizen of the United States recommended for such award by the Secretary.

[16 U.S.C. 470h-2(i) — Applicability of National Environmental Policy Act]

(i) Nothing in this Act shall be construed to require the preparation of an environmental impact statement where such a statement would not otherwise be required under the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seq.], and nothing is this Act shall be construed to provide any exemption from any requirement respecting the preparation of such a statement under such Act.

[16 U.S.C. 470h-2(j) — Disaster waivers]

(j) The Secretary shall promulgate regulations under which the requirements of this section may be waived in whole or in part in the event of a major natural disaster or an imminent threat to the national security.

[16 U.S.C. 470h-2(k) — Anticipatory demolition]

(k) Each Federal agency shall ensure that the agency will not grant a loan, loan guarantee, permit, license, or other assistance to an applicant who, with intent to avoid the requirements of section 106 of this Act, has intentionally significantly adversely affected a historic property to which the grant would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the agency, after consultation with the Council, determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant.

[16 U.S.C. 470h-2(l) — Documentation of Federal agency Section 106 decisions]

(l) With respect to any undertaking subject to section 106 of this Act which adversely affects any property included in or eligible for inclusion in the National Register, and for which a Federal agency has not entered into an agreement pursuant to regulations issued by the Council, the head of such agency shall document any decision made pursuant to section 106 of this Act. The head of such agency may not delegate his or her responsibilities pursuant to such section. Where a section 106 of this Act memorandum of agreement has been executed with respect to an undertaking, such memorandum shall govern the undertaking and all of its parts.

Section 111

[16 U.S.C. 470h-3(a) — Lease or exchange of Federal historic property]

(a) Notwithstanding any other provision of law, any Federal agency after consultation with the Council, shall, to the extent practicable, establish and implement alternatives for historic properties, including adaptive use, that are not needed for current or projected agency purposes, and may lease an historic property owned by the agency to any person or organization, or exchange any property owned by the agency with comparable historic property, if the agency head determines that the lease or exchange will adequately insure the preservation of the historic property.

[16 U.S.C. 470h-3(b) — Use of proceeds]

(b) The proceeds of any lease under subsection (a) of this section may, notwithstanding any other provision of law, be retained by the agency entering into such lease and used to defray the costs of administration, maintenance, repair, and related expenses incurred by the agency with respect to such property or other properties which are on the National Register which are owned by, or are under the jurisdiction or control of, such agency. Any surplus proceeds from such leases shall be deposited into the Treasury of the United States at the end of the second fiscal year following the fiscal year in which such proceeds were received.

[16 U.S.C. 470h-3(c) — Management contracts]

(c) The head of any Federal agency having responsibility for the management of any historic property may, after consultation with the Advisory Council on Historic Preservation, enter into contracts for the management of such property. Any such contract shall contain such terms and conditions as the head of such agency deems necessary or appropriate to protect the interests of the United States and insure adequate preservation of historic property.

Section 112

[16 U.S.C. 470h-4(a) — Each Federal agency is to protect historic resources through professionalism of employees and contractors]

(a) Each Federal agency that is responsible for the protection of historic resources, including archaeological resources pursuant to this Act or any other law shall ensure each of the following —

(1) (A) All actions taken by employees or contractors of such agency shall meet professional standards under regulations developed by the Secretary in consultation with the Council, other affected agencies, and the appropriate professional societies of the disciplines involved, specifically archaeology, architecture, conservation, history, landscape architecture, and planning.

(B) Agency personnel or contractors responsible for historic resources shall meet qualification standards established by the Office of Personnel Management in consultation with the Secretary and appropriate professional societies of the disciplines involved. The Office of Personnel Management shall revise qualification standards within 2 years after October 30, 1992, [the date of enactment of the 1992 Amendments to this Act] for the disciplines involved, specifically archaeology, architecture, conservation, curation, history, landscape architecture, and planning. Such standards shall consider the particular skills and expertise needed for the preservation of historic resources and shall be equivalent requirements for the disciplines involved.

[Maintaining permanent databases]

(2) Records and other data, including data produced by historical research and archaeological surveys and excavations are permanently maintained in appropriate data bases and made available to potential users pursuant to such regulations as the Secretary shall promulgate.

[16 U.S.C. 470h-4(b) — Secretary to promulgate guidelines to owners about protecting and preserving historic resources]

(b) In order to promote the preservation of historic resources on properties eligible for listing in the National Register, the Secretary shall, in consultation with the Council, promulgate guidelines to ensure that Federal, State, and tribal historic preservation programs subject to this Act include plans to —

(1) provide information to the owners of properties containing historic (including architectural, curatorial, and archaeological) resources with demonstrated or likely research significance, about the need for protection of such resources, and the available means of protection;

(2) encourage owners to preserve such resources intact and in place and offer the owners of such resources information on the tax and grant assistance available for the donation of the resources or of a preservation easement of the resources;

[Encourage protection of Native American cultural items and properties]

(3) encourage the protection of Native American cultural items (within the meaning of section 2 (3) and (9) of the Native American Grave Protection and Repatriation Act (25 U.S.C. 3001 (3) and (9))) and of properties of religious or cultural importance to Indian tribes, Native Hawaiians, or other Native American groups; and

[Conduct archeological excavations to meet Federal standards, allow access to artifacts for research, consult with Indian tribe or Native Hawaiian organization if related items likely]

(4) encourage owners who are undertaking archaeological excavations to —

(A) conduct excavations and analyses that meet standards for federally-sponsored excavations established by the Secretary;

(B) donate or lend artifacts of research significance to an appropriate research institution;

(C) allow access to artifacts for research purposes; and

(D) prior to excavating or disposing of a Native American cultural item in which an Indian tribe or Native Hawaiian organization may have an interest under section 3(a)(2) (B) or (C) of the Native American Grave Protection and Repatriation Act (25 U.S.C. 3002(a)(2) (B) and (C)), given notice to and consult with such Indian tribe or Native Hawaiian organization.

Section 113

[16 U.S.C. 470h-5(a) — Study to report ways to control illegal trafficking in]

(a) In order to help control illegal interstate and international traffic in antiquities, including archaeological, curatorial, and architectural objects, and historical documents of all kinds, the Secretary shall study and report on the suitability and feasibility of alternatives for controlling illegal interstate and international traffic in antiquities.

[16 U.S.C. 470h-5(b) — Consultation]

(b) In conducting the study described in subsection (a) of this section the Secretary shall consult with the Council and other Federal agencies that conduct, cause to be conducted, or permit archaeological surveys or excavations or that have responsibilities for other kinds of antiquities and with State Historic Preservation Officers, archaeological, architectural, historical, conservation, and curatorial organizations, Indian tribes, Native Hawaiian organizations, and other Native American organizations, international organizations and other interested persons.

[16 U.S.C. 470h-5(c) — Report]

(c) Not later than 18 months after October 30, 1992 [the date of enactment of this section], the Secretary shall submit to Congress a report detailing the Secretary's findings and recommendations from the study described in subsection (a) of this section.

[16 U.S.C. 470h-5(d) — Funding authorization]

(d) There are authorized to be appropriated not more than $500,000 for the study described in subsection (a) of this section, such sums to remain available until expended.

TITLE II

Section 201

[16 U.S.C. 470i(a) — Advisory Council on Historic Preservation; membership]

(a) There is established as an independent agency of the United States Government an Advisory Council on Historic Preservation which shall be composed of the following members:

(1) a Chairman appointed by the President selected from the general public;

(2) the Secretary of the Interior;

(3) the Architect of the Capitol;

(4) the Secretary of Agriculture and the heads of seven other agencies of the United States (other than the Department of the Interior), the activities of which affect historic preservation, designated by the President;

(5) one Governor appointed by the President;

(6) one mayor appointed by the President;

(7) the President of the National Conference of State Historic Preservation Officers;

(8) the Chairman of the National Trust for Historic Preservation;

(9) four experts in the field of historic preservation appointed by the President from the disciplines of architecture, history, archaeology, and other appropriate disciplines;

(10) three at-large members from the general public, appointed by the President; and

(11) one member of an Indian tribe or Native Hawaiian organization who represents the interests of the tribe or organization of which he or she is a member, appointed by the President.

[16 U.S.C. 470i(b) — Designees]

(b) Each member of the Council specified in paragraphs (2) through (8) other than (6) of subsection (a) of this section may designate another officer of his department, agency, or organization to serve on the Council in his stead, except that, in the case of paragraphs (2) and (4), no such officer other than an Assistant Secretary or an officer having major department-wide or agency-wide responsibilities may be so designated.

[16 U.S.C. 470i(c) — Term of office]

(c) Each member of the Council appointed under paragraph (1), and under paragraphs (9) through (11) of subsection (a) of this section shall serve for a term of four years from the expiration of his predecessor's term; except that the members first appointed under that paragraph shall serve for terms of one to four years, as designated by the President at the time of appointment, in such manner as to insure that the terms of not more than two of them will expire in any one year. The members appointed under paragraphs (5) and (6) shall serve for the term of their elected office but not in excess of four years. An appointed member may not serve more than two terms. An appointed member whose term has expired shall serve until that member's successor has been appointed.

[16 U.S.C. 470i(d) — Vacancies]

(d) A vacancy in the Council shall not affect its powers, but shall be filled not later than sixty days after such vacancy commences, in the same manner as the original appointment (and for the balance of any unexpired terms). The members of the Advisory Council on Historic Preservation appointed by the President under this Act as in effect on the day before December 12, 1980 [the enactment of the National Historic Preservation Act Amendments of 1980], shall remain in office until all members of the Council, as specified in this section, have been appointed. The members first appointed under this section shall be appointed not later than one hundred and eighty days after December 12, 1980 [the enactment of the National Historic Preservation Act Amendments of 1980].

[16 U.S.C. 470i(e) — Vice Chairman]

(e) The President shall designate a Vice Chairman, from the members appointed under paragraphs (5), (6), (9), or (10). The Vice Chairman may act in place of the Chairman during the absence or disability of the Chairman or when the office is vacant.

[16 U.S.C. 470i(f) — Quorum]

(f) 12 members of the Council shall constitute a quorum.

Section 202

[16 U.S.C. 470j(a) — Duties of Council]

(a) The Council shall —

(1) advise the President and the Congress on matters relating to historic preservation; recommend measures to coordinate activities of Federal, State, and local agencies and private institutions and individuals relating to historic preservation; and advise on the dissemination of information pertaining to such activities;

(2) encourage, in cooperation with the National Trust for Historic Preservation and appropriate private agencies, public interest and participation in historic preservation;

(3) recommend the conduct of studies in such areas as the adequacy of legislative and administrative statutes and regulations pertaining to historic preservation activities of State and local governments and the effects of tax policies at all levels of government on historic preservation;

(4) advise as to guidelines for the assistance of State and local governments in drafting legislation relating to historic preservation;

(5) encourage, in cooperation with appropriate public and private agencies and institutions, training and education in the field of historic preservation;

(6) review the policies and programs of Federal agencies and recommend to such agencies methods to improve the effectiveness, coordination, and consistency of those policies and programs with the policies and programs carried out under this Act; and

(7) inform and educate Federal agencies, State and local governments, Indian tribes, other nations and international organizations and private groups and individuals as to the Council's authorized activities.

[16 U.S.C. 470j(b) — Annual and special reports]

(b) The Council shall submit annually a comprehensive report of its activities and the results of its studies to the President and the Congress and shall from time to time submit such additional and special reports as it deems advisable. Each report shall propose such legislative enactments and other actions as, in the judgment of the Council, are necessary and appropriate to carry out its recommendations and shall provide the Council's assessment of current and emerging problems in the field of historic preservation and an evaluation of the effectiveness of the programs of Federal agencies, State and local governments, and the private sector in carrying out the purposes of this Act.

Section 203

[16 U.S.C. 470k — Information from agencies]

The Council is authorized to secure directly from any department, bureau, agency, board, commission, office, independent establishment or instrumentality of the executive branch of the Federal Government information,

suggestions, estimates, and statistics for the purpose of this title of the Act; and each such department, bureau, agency, board, commission, office, independent establishment or instrumentality is authorized to furnish such information, suggestions, estimates, and statistics to the extent permitted by law and within available funds.

Section 204

[16 U.S.C. 470l — Compensation of members]

The members of the Council specified in paragraphs (2), (3), and (4) of section 201(a) shall serve without additional compensation. The other members of the Council shall receive $100 per diem when engaged in the performance of the duties of the Council. All members of the Council shall receive reimbursement for necessary traveling and subsistence expenses incurred by them in the performance of the duties of the Council.

Section 205

[16 U.S.C. 470m(a) — Executive Director]

(a) There shall be an Executive Director of the Council who shall be appointed in the competitive service by the Chairman with the concurrence of the Council. The Executive Director shall report directly to the Council and perform such functions and duties as the Council may prescribe.

[16 U.S.C. 470m(b) — General Counsel and other attorneys]

(b) The Council shall have a General Counsel, who shall be appointed by the Executive Director. The General Counsel shall report directly to the Executive Director and serve as the Council's legal advisor. The Executive Director shall appoint such other attorneys as may be necessary to assist the General Counsel, represent the Council in courts of law whenever appropriate, including enforcement of agreements with Federal agencies to which the Council is a party, assist the Department of Justice in handling litigation concerning the Council in courts of law, and perform such other legal duties and functions as the Executive Director and the Council may direct.

[16 U.S.C. 470m(c) — Appointment and compensation of staff]

(c) The Executive Director of the Council may appoint and fix the compensation of such officers and employees in the competitive service as are necessary to perform the functions of the Council at rates not to exceed that now or hereafter prescribed for the highest rate for grade 15 of the General Schedule under section 5332 of title 5 [United States Code]: *Provided, however,* That the Executive Director, with the concurrence of the Chairman, may appoint and fix the compensation of not to exceed five employees in the competitive service at rates not to exceed that now or hereafter prescribed for the highest rate of grade 17 of the General Schedule under section 5332 of Title 5 [United States Code].

[16 U.S.C. 470m(d) — Appointment and compensation of additional personnel]

(d) The Executive Director shall have power to appoint and fix the compensation of such additional personnel as may be necessary to carry out its duties, without regard to the provisions of the civil service laws and the Classification Act of 1949 [chapter 51 and subchapter III of chapter 53 of Title 5, U.S. Code].

[16 U.S.C. 470m(e) — Expert and consultant services]

(e) The Executive Director of the Council is authorized to procure expert and consultant services in accordance with the provisions of section 3109 of title 5 [United States Code].

[16 U.S.C. 470m(f) — Financial and administrative services]

(f) Financial and administrative services (including those related to budgeting, accounting, financial reporting, personnel and procurement) shall be provided the Council by the Department of the Interior or, at the discretion of the Council, such other agency or private entity that reaches an agreement with the Council, for which payments shall be made in advance or by reimbursement from funds of the Council in such amounts as may be agreed upon by the Chairman of the Council and the head of the agency or, in the case of a private entity, the authorized representative of the private entity that will provide the services. When a Federal agency affords such services, the regulations of that agency for the collection of indebtedness of personnel resulting from erroneous payments (5 U.S.C. 5514(b)) shall apply to the collection of erroneous payments made to or on behalf of a Council employee and regulations of that agency for the administrative control of funds (31 U.S.C. 1513(d), 1514) shall apply to appropriations of the Council. The Council shall not be required to prescribe such regulations.

[16 U.S.C. 470m(g) — Use of funds, personnel, facilities, and services]

(g) Any Federal agency may provide the Council, with or without reimbursement as may be agreed upon by the Chairman and the agency, with such funds, personnel, facilities, and services under their jurisdiction and control as may be needed by the Council to carry out its duties, to the extent that such funds, personnel, facilities, and services are requested by the Council and are otherwise available for that purpose. Any funds provided to the Council pursuant to this subsection must be expended by the end of the fiscal year following the fiscal year in which the funds are received by the Council. To the extent of available appropriations, the Council may obtain, by purchase, rental, donation, or otherwise, such additional property, facilities, and services as may be needed to carry out its duties and may also receive donations of moneys for such purpose, and the Executive Director is authorized, in his discretion, to accept, hold, use, expend, and administer the same for the purposes of this Act.

Section 206

[16 U.S.C. 470n(a) — International Centre for the Study of the Preservation and Restoration of Cultural Property; authorization]

(a) The participation of the United States as a member of the International Centre for the Study of the Preservation and Restoration of Cultural Property is hereby authorized.

[16 U.S.C. 470n(b) — Members of official delegation]

(b) The Council shall recommend to the Secretary of State, after consultation with the Smithsonian Institution and other public and private organizations concerned with the technical problems of preservation, the members of the official delegation which will participate in the activities of the Centre on behalf of the United States. The Secretary of State shall appoint the members of the official delegation from the persons recommended to him by the Council.

[16 U.S.C. 470n(c) — Authorization for membership payment]

(c) For the purposes of this section there is authorized to be appropriated an amount equal to the assessment for United States membership in the Centre for fiscal years 1979, 1980, 1981, and 1982: *Provided*, That no appropriation is authorized and no payment shall be made to the Centre in excess of 25 per centum of the total annual assessment of such organization. Authorization for payment of such assessment shall begin in fiscal year 1981, but shall include earlier costs.

Section 207

[16 U.S.C. 470o — Transfer of personnel, funds, etc. to the Council]

So much of the personnel, property, records, and unexpended balances of appropriations, allocations, and other funds employed, held, used, programmed, or available or to be made available by the Department of the Interior in connection with the functions of the Council, as the Director of the Office of Management and Budget shall determine, shall be transferred from the Department to the Council within 60 days of the effective date of this Act [Pub. L. 94-422, September 28, 1976].

Section 208

[16 U.S.C. 470p — Rights of Council employees]

Any employee in the competitive service of the United States transferred to the Council under the provisions of this section shall retain all rights, benefits, and privileges pertaining thereto held prior to such transfer.

Section 209

[16 U.S.C. 470q — Exemption from Federal Advisory Committee Act]

The Council is exempt from the provisions of the Federal Advisory Committee Act (86 Stat. 770), and the provisions of subchapter II of chapter 5 and chapter 7, of Title 5 [U.S. Code] [the Administrative Procedure Act (80 Stat. 381)] shall govern the operations of the Council.

Section 210

[16 U.S.C. 470r — Direct Submission to the Congress]

No officer or agency of the United States shall have any authority to require the Council to submit its legislative recommendations, or testimony, or comments on legislation to any officer or agency of the United States for approval, comments, or review, prior to the submission of such recommendations, testimony, or comments to the Congress. In instances in which the Council voluntarily seeks to obtain the comments or review of any officer or agency of the United States, the Council shall include a description of such actions in its legislative recommendations, testimony, or comments on legislation which it transmits to the Congress.

Section 211

[16 U.S.C. 470s — Regulations for Section 106; local government participation]

The Council is authorized to promulgate such rules and regulations as it deems necessary to govern the implementation of section 106 of this Act in its entirety. The Council shall, by regulation, establish such procedures as may be necessary to provide for participation by local governments in proceedings and other actions taken by the Council with respect to undertakings referred to in section 106 of this Act which affect such local governments.

Section 212

[16 U.S.C. 470t(a) — Council appropriation authorization]

(a) The Council shall submit its budget annually as a related agency of the Department of the Interior. There are authorized to be appropriated such amounts as may be necessary to carry out this title.

[16 U.S.C. 470t(b) — Concurrent submission of budget to Congress]

(b) Whenever the Council submits any budget estimate or request to the President or the Office of Management and Budget, it shall concurrently transmit copies of that estimate or request to the House

and Senate Appropriations Committees and the House Committee on Natural Resources and the Senate Committee on Energy and Natural Resources.

Section 213

[16 U.S.C. 470u — Reports from Secretary at request of Council]

To assist the Council in discharging its responsibilities under this Act, the Secretary at the request of the Chairman, shall provide a report to the Council detailing the significance of any historic property, describing the effects of any proposed undertaking on the affected property, and recommending measures to avoid, minimize, or mitigate adverse effects.

Section 214

[16 U.S.C. 470v — Exemptions for Federal activities from provisions of the Act]

The Council, with the concurrence of the Secretary, shall promulgate regulations or guidelines, as appropriate, under which Federal programs or undertakings may be exempted from any or all of the requirements of this Act when such exemption is determined to be consistent with the purposes of this Act, taking into consideration the magnitude of the exempted undertaking or program and the likelihood of impairment of historic properties.

Section 215

[16 U.S.C. 470v-1 — Reimbursement from State and local agencies, etc.]

Subject to applicable conflict of interest laws, the Council may receive reimbursements from State and local agencies and others pursuant to agreements executed in furtherance of the purposes of this Act.

Section 216

[16 U.S.C. 470v-2(a) — Cooperative Agreements]

(a) The Council may enter into a cooperative agreement with any Federal agency that administers a grant or assistance program for the purpose of improving the effectiveness of the administration of such program in meeting the purposes and policies of this Act. Such cooperative agreements may include provisions that modify the selection criteria for a grant or assistance program to further the purposes of this Act or that allow the Council to participate in the selection of recipients, if such provisions are not inconsistent with the grant or assistance program's statutory authorization and purpose.

[16 U.S.C. 470v-2(b) — Review of Grant and Assistance Programs]

(b) The Council may —

(1) review the operation of any Federal grant or assistance program to evaluate the effectiveness of such program in meeting the purposes and policies of this Act;

(2) make recommendations to the head of any Federal agency that administers such program to further the consistency of the program with the purposes and policies of the Act and to improve its effectiveness in carrying out those purposes and policies; and

(3) make recommendations to the President and Congress regarding the effectiveness of Federal grant and assistance programs in meeting the purposes and policies of this Act, including recommendations with regard to appropriate funding levels.

TITLE III

Section 301

[16 U.S.C. 470w — Definitions]

As used in this Act, the term —

(1) **"Agency"** means agency as such term is defined in section 551 of title 5 [United States Code].

(2) **"State"** means any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, and the Trust Territory of the Pacific Islands, the Republic of the Marshall Islands, the Federated States of Micronesia, and, upon termination of the Trusteeship Agreement for the Trust Territory of the Pacific Islands, the Republic of Palau.

(3) **"Local government"** means a city, county, parish, township, municipality, or borough, or any other general purpose political subdivision of any State.

(4) **"Indian tribe"** or **"tribe"** means an Indian tribe, band, nation, or other organized group or community, including a Native village, Regional Corporation or Village Corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act [43 U.S.C. 1602], which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

(5) **"Historic property"** or **"historic resource"** means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register, including artifacts, records, and material remains related to such a property or resource.

(6) **"National Register"** or **"Register"** means the National Register of Historic Places established under section 101 of this Act.

(7) **"Undertaking"** means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including —

(A) those carried out by or on behalf of the agency;

(B) those carried out with Federal financial assistance;

(C) those requiring a Federal permit license, or approval; and

(D) those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency.

(8) **"Preservation"** or **"historic preservation**" includes identification, evaluation, recordation, documentation, curation, acquisition, protection, management, rehabilitation, restoration, stabilization, maintenance, research, interpretation, conservation, and education and training regarding the foregoing activities, or any combination of the foregoing activities.

(9) **"Cultural park"** means a definable area which is distinguished by historic resources and land related to such resources and which constitutes an interpretive, educational, and recreational resource for the public at large.

(10) **"Historic conservation district"** means an area which contains

(A) historic properties,

(B) buildings having similar or related architectural characteristics,

(C) cultural cohesiveness, or

(D) any combination of the foregoing.

(11) **"Secretary"** means the Secretary of the Interior acting through the Director of the National Park Service except where otherwise specified.

(12) **"State Historic Preservation Review Board"** means a board, council, commission, or other similar collegial body established as provided in section 101(b)(1)(B) of this Act —

(A) the members of which are appointed by the State Historic Preservation Officer (unless otherwise provided for by State law),

(B) a majority of the members of which are professionals qualified in the following and related disciplines: history, prehistoric and historic archaeology, architectural history, architecture, folklore, cultural anthropology, curation, conservation, and landscape architecture, and

(C) which has the authority to —

(i) review National Register nominations and appeals from nominations;

(ii) review appropriate documentation submitted in conjunction with the Historic Preservation Fund;

(iii) provide general advice and guidance to the State Historic Preservation Officer; and

(iv) perform such other duties as may be appropriate.

(13) **"Historic preservation review commission"** means a board, council, commission, or other similar collegial body which is established by State or local legislation as provided in section 101(c)(1)(B) of this Act, and the members of which are appointed, unless otherwise provided by State or local legislation, by the chief elected official of the jurisdiction concerned from among —

(A) professionals in the disciplines of architecture, history, architectural history, planning, prehistoric and historic archaeology, folklore, cultural anthropology, curation, conservation, and landscape architecture, or related disciplines, to the extent such professionals are available in the community concerned, and

(B) such other persons as have demonstrated special interest, experience, or knowledge in history, architecture, or related disciplines and as will provide for an adequate and qualified commission.

(14) **"Tribal lands"** means —

(A) all lands within the exterior boundaries of any Indian reservation; and

(B) all dependent Indian communities.

(15) **"Certified local government"** means a local government whose local historic preservation program has been certified pursuant to section 101(c) of this Act.

(16) **"Council"** means the Advisory Council on Historic Preservation established by section 201 of this Act.

(17) **"Native Hawaiian"** means any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii.

(18) **"Native Hawaiian organization"** means any organization which —

(A) serves and represents the interests of Native Hawaiians;

(B) has as a primary and stated purpose the provision of services to Native Hawaiians; and

(C) has demonstrated expertise in aspects of historic preservation that are culturally significant to Native Hawaiians.

The term includes, but is not limited to, the Office of Hawaiian Affairs of the State of Hawaii and Hui Malama I Na Kupuna O Hawai'i Nei, an organization incorporated under the laws of the State of Hawaii.

Section 302

[16 U.S.C. 470w-1 — Authority to expend funds for purposes of this Act]

Where appropriate, each Federal agency is authorized to expend funds appropriated for its authorized programs for the purposes of activities carried out pursuant to this Act, except to the extent appropriations legislation expressly provides otherwise.

Section 303

[16 U.S.C. 470w-2(a) — Donations to Secretary; money and personal property]

(a) The Secretary is authorized to accept donations and bequests of money and personal property for the purposes of this Act and shall hold, use, expend, and administer the same for such purposes.

[16 U.S.C. 470w-2(b) — Donations of less than fee interests in real property]

(b) The Secretary is authorized to accept gifts or donations of less than fee interests in any historic property where the acceptance of such interests will facilitate the conservation or preservation of such properties. Nothing in this section or in any provision of this Act shall be construed to affect or impair any other authority of the Secretary under other provision of law to accept or acquire any property for conservation or preservation or for any other purpose.

Section 304

[16 U.S.C. 470w-3(a) — Confidentiality of the location of sensitive historic resources]

(a) The head of a Federal agency or other public official receiving grant assistance pursuant to this Act, after consultation with the Secretary, shall withhold from disclosure to the public, information about the location, character, or ownership of a historic resource if the Secretary and the agency determine that disclosure may —

(1) cause a significant invasion of privacy;

(2) risk harm to the historic resources; or

(3) impede the use of a traditional religious site by practitioners.

[16 U.S.C. 470w-3(b) — Access Determination]

(b) When the head of a Federal agency or other public official has determined that information should be withheld from the public pursuant to subsection (a) of this section, the Secretary, in consultation with such Federal agency head or official, shall determine who may have access to the information for the purpose of carrying out this Act.

[16 U.S.C. 470w-3(c) — Consultation with the Advisory Council]

(c) When the information in question has been developed in the course of an agency's compliance with section 106 or 110(f) of this Act, the Secretary shall consult with the Council in reaching determinations under subsections (a) and (b) of this section.

Section 305

[16 U.S.C. 470w-4 — Attorneys' fees]

In any civil action brought in any United States district court by any interested person to enforce the provisions of this Act, if such person substantially prevails in such action, the court may award attorneys' fees, expert witness fees, and other costs of participating in such action, as the court deems reasonable.

Section 306

[16 U.S.C. 470w-5(a) — National Center for the Building Arts]

(a) In order to provide a national center to commemorate and encourage the building arts and to preserve and maintain a nationally significant building which exemplifies the great achievements of the building arts in the United States, the Secretary and the Administrator of the General Services Administration are authorized and directed to enter into a cooperative agreement with the Committee for a National Museum of the Building Arts, Incorporated, a nonprofit corporation organized and existing under the laws of the District of Columbia, or its successor, for the operation of a National Museum for the Building Arts in the Federal Building located in the block bounded by Fourth Street, Fifth Street, F Street, and G Street, Northwest in Washington, District of Columbia. Such museum shall —

(1) collect and disseminate information concerning the building arts, including the establishment of a national reference center for current and historic documents, publications, and research relating to the building arts;

(2) foster educational programs relating to the history, practice and contribution to society of the building arts, including promotion of imaginative educational approaches to enhance understanding and appreciation of all facets of the building arts;

(3) publicly display temporary and permanent exhibits illustrating, interpreting and demonstrating the building arts;

(4) sponsor or conduct research and study into the history of the building arts and their role in shaping our civilization; and

(5) encourage contributions to the building arts.

[16 U.S.C. 470w-5(b) — Cooperative agreement]

(b) The cooperative agreement referred to in subsection (a) of this section shall include provisions which —

(1) make the site available to the Committee referred to in subsection (a) of this section without charge;

(2) provide, subject to available appropriations, such maintenance, security, information, janitorial and other services as may be necessary to assure the preservation and operation of the site; and

(3) prescribe reasonable terms and conditions by which the Committee can fulfill its responsibilities under this Act.

[16 U.S.C. 470w-5(c) — Grants to Committee]

(c) The Secretary is authorized and directed to provide matching grants-in-aid to the Committee referred to in subsection (a) of this section for its programs related to historic preservation. The Committee shall match such grants-in-aid in a manner and with such funds and services as shall be satisfactory to the Secretary, except that no more than $500,000 may be provided to the Committee in any one fiscal year.

[16 U.S.C. 470w-5(d) — Site renovation]

(d) The renovation of the site shall be carried out by the Administrator with the advice of the Secretary. Such renovation shall, as far as practicable —

(1) be commenced immediately,

(2) preserve, enhance, and restore the distinctive and historically authentic architectural character of the site consistent with the needs of a national museum of the building arts and other compatible use, and

(3) retain the availability of the central court of the building, or portions thereof, for appropriate public activities.

[16 U.S.C. 470w-5(e) — Annual report]

(e) The Committee shall submit an annual report to the Secretary and the Administrator concerning its

activities under this section and shall provide the Secretary and the Administrator with such other information as the Secretary may, from time to time, deem necessary or advisable.

[16 U.S.C. 470w-5(f) — Definition of "building arts"]

(f) For purposes of this section, the term **"building arts"** includes, but shall not be limited to, all practical and scholarly aspects of prehistoric, historic, and contemporary architecture, archaeology, construction, building technology and skills, landscape architecture, preservation and conservation, building and construction, engineering, urban and community design and renewal, city and regional planning, and related professions, skills, trades, and crafts.

Section 307

[16 U.S.C. 470w-6(a) — Effective date of regulations]

(a) No final regulation of the Secretary shall become effective prior to the expiration of thirty calendar days after it is published in the Federal Register during which either or both Houses of Congress are in session.

[16 U.S.C. 470w-6(b) — Congressional disapproval of regulations]

(b) The regulation shall not become effective if, within ninety calendar days of continuous session of Congress after the date of promulgation, both Houses of Congress adopt a concurrent resolution, the matter after the resolving clause of which is as follows: "That Congress disapproves the regulation promulgated by the Secretary dealing with the matter of_____, which regulation was transmitted to Congress on_____," the blank spaces therein being appropriately filled.

[16 U.S.C. 470w-6(c) — Inaction by Congress]

(c) If at the end of sixty calendar days of continuous session of Congress after the date of promulgation of a regulation, no committee of either House of Congress has reported or been discharged from further consideration of a concurrent resolution disapproving the regulation, and neither House has adopted such a resolution, the regulation may go into effect immediately. If, within such sixty calendar days, such a committee has reported or been discharged form further consideration of such a resolution, the regulation may go into effect not sooner than ninety calendar days of continuous session of Congress after its promulgation unless disapproved as provided for.

[16 U.S.C. 470w-6(d) — Definitions]

(d) For the purposes of this section-

(1) continuity of session is broken only by an adjournment sine die; and

(2) the days on which either House is not in session because of an adjournment of more than three days to a day certain are excluded in the computation of sixty and ninety calendar days of continuous session of Congress.

[16 U.S.C. 470w-6(e) — Effect of Congressional inaction]

(e) Congressional inaction on or rejection of a resolution of disapproval shall not be deemed an expression of approval of such regulation.

Section 308

[16 U.S.C. 470w-7(a) — National historic light station program]

(a) In order to provide a national historic light station program, the Secretary shall —

(1) collect and disseminate information concerning historic light stations, including historic lighthouses and associated structures;

(2) foster educational programs relating to the history, practice, and contribution to society of historic light stations;

(3) sponsor or conduct research and study into the history of light stations;

(4) maintain a listing of historic light stations; and

(5) assess the effectiveness of the program established by this section regarding the conveyance of historic light stations.

[16 U.S.C. 470w-7(b) — Conveyance of Historic Light Stations]

(b) (1) Not later than 1 year after the date of the enactment of this section, the Secretary and the Administrator shall establish a process and policies for identifying, and selecting, an eligible entity to which a historic light station could be conveyed for education, park, recreation, cultural, or historic preservation purposes, and to monitor the use of such light station by the eligible entity.

(2) The Secretary shall review all applications for the conveyance of a historic light station, when the agency with administrative jurisdiction over the historic light station has determined the property to be `excess property' as that term is defined in the Federal Property Administrative Services Act of 1949 (40 U.S.C. 472(e)), and forward to the Administrator a single approved application for the conveyance of the historic light station. When selecting an eligible entity, the Secretary shall consult with the State Historic Preservation Officer of the State in which the historic light station is located.

(3) (A) Except as provided in subparagraph (B), the Administrator shall convey, by quitclaim deed, without consideration, all right, title, and interest of the United States in and to the historic light station, subject to the conditions set forth in subsection (c) after the Secretary's selection of an eligible entity. The conveyance of a historic light station under this section shall not be subject to the provisions of the Stewart B. McKinney Homeless Assistance Act (42 U.S.C. 11301 et seq.) or section 416(d) of the Coast Guard Authorization Act of 1998 (Public Law 105-383).

(B) (i) Historic light stations located within the exterior boundaries of a unit of the National Park System or a refuge within the National Wildlife Refuge System shall be conveyed or sold only with the approval of the Secretary.

(ii) If the Secretary approves the conveyance of a historic light station referenced in this paragraph, such conveyance shall be subject to the conditions set forth in subsection (c) and any other terms or conditions the Secretary considers necessary to protect the resources of the park unit or wildlife refuge.

(iii) If the Secretary approves the sale of a historic light station referenced in this paragraph, such sale shall be subject to the conditions set forth in subparagraphs (A) through (D) and (H) of subsection (c)(1) and subsection (c)(2) and any other terms or conditions the Secretary considers necessary to protect the resources of the park unit or wildlife refuge.

(iv) For those historic light stations referenced in this paragraph, the Secretary is encouraged to enter into cooperative agreements with appropriate eligible entities, as provided in this Act, to the extent such cooperative agreements are consistent with the Secretary's responsibilities to manage and administer the park unit or wildlife refuge, as appropriate.

[16 U.S.C. 470w-7(c) — Terms of Conveyance]

(c) (1) The conveyance of a historic light station shall be made subject to any conditions, including the reservation of easements and other rights on behalf of the United States, the Administrator considers necessary to ensure that —

(A) the Federal aids to navigation located at the historic light station in operation on the date of conveyance remain the personal property of the United States and continue to be operated and maintained by the United States for as long as needed for navigational purposes;

(B) there is reserved to the United States the right to remove, replace, or install any Federal aid to navigation located at the historic light station as may be necessary for navigational purposes;

(C) the eligible entity to which the historic light station is conveyed under this section shall not interfere or allow interference in any manner with any Federal aid to navigation, nor hinder activities required for the operation and maintenance of any Federal aid to navigation, without the express written permission of the head of the agency responsible for maintaining the Federal aid to navigation;

(D) the eligible entity to which the historic light station is conveyed under this section shall, at its own cost and expense, use and maintain the historic light station in accordance with this Act, the Secretary of the Interior's Standards for the Treatment of Historic Properties, 36 CFR part 68, and other applicable laws, and any proposed changes to the historic light station shall be reviewed and approved by the Secretary in consultation with the State Historic Preservation Officer of the State in which the historic light station is located, for consistency with 36 CFR part 800.5(a)(2)(vii), and the Secretary of the Interior's Standards for Rehabilitation, 36 CFR part 67.7;

(E) the eligible entity to which the historic light station is conveyed under this section shall make the historic light station available for education, park, recreation, cultural or historic preservation purposes for the general public at reasonable times and under reasonable conditions;

(F) the eligible entity to which the historic light station is conveyed shall not sell, convey, assign, exchange, or encumber the historic light station, any part thereof, or any associated historic artifact conveyed to the eligible entity in conjunction with the historic light station conveyance, including but not limited to any lens or lanterns,

unless such sale, conveyance, assignment, exchange or encumbrance is approved by the Secretary;

(G) the eligible entity to which the historic light station is conveyed shall not conduct any commercial activities at the historic light station, any part thereof, or in connection with any associated historic artifact conveyed to the eligible entity in conjunction with the historic light station conveyance, in any manner, unless such commercial activities are approved by the Secretary; and

(H) the United States shall have the right, at any time, to enter the historic light station conveyed under this section without notice, for purposes of operating, maintaining, and inspecting any aid to navigation and for the purpose of ensuring compliance with this subsection, to the extent that it is not possible to provide advance notice.

(2) Any eligible entity to which a historic light station is conveyed under this section shall not be required to maintain any Federal aid to navigation associated with a historic light station, except any private aids to navigation permitted under section 83 of title 14, United States Code, to the eligible entity.

(3) In addition to any term or condition established pursuant to this subsection, the conveyance of a historic light station shall include a condition that the historic light station, or any associated historic artifact conveyed to the eligible entity in conjunction with the historic light station conveyance, including but not limited to any lens or lanterns, at the option of the Administrator, shall revert to the United States and be placed under the administrative control of the Administrator, if —

(A) the historic light station, any part thereof, or any associated historic artifact ceases to be available for education, park, recreation, cultural, or historic preservation purposes for the general public at reasonable times and under reasonable conditions which shall be set forth in the eligible entity's application;

(B) the historic light station or any part thereof ceases to be maintained in a manner that ensures its present or future use as a site for a Federal aid to navigation;

(C) the historic light station, any part thereof, or any associated historic artifact ceases to be maintained in compliance with this Act, the Secretary of the Interior's Standards for the Treatment of Historic Properties, 36 CFR part 68, and other applicable laws;

(D) the eligible entity to which the historic light station is conveyed, sells, conveys, assigns, exchanges, or encumbers the historic light station, any part thereof, or any associated historic artifact, without approval of the Secretary;

(E) the eligible entity to which the historic light station is conveyed, conducts any commercial activities at the historic light station, any part thereof, or in conjunction with any associated historic artifact, without approval of the Secretary; or

(F) At least 30 days before the reversion, the Administrator provides written notice to the owner that the historic light station or any part thereof is needed for national security purposes.

[16 U.S.C. 470w-7(d) — Description of Property]

(d) (1) The Administrator shall prepare the legal description of any historic light station conveyed under this section. The Administrator, in consultation with the Commandant, United States Coast Guard, and the Secretary, may retain all right, title, and interest of the United States in and to any historical artifact, including any lens or lantern, that is associated with the historic light station and located at the light station at the time of conveyance. Wherever possible, such historical artifacts should be used in interpreting that station. In cases where there is no method for preserving lenses and other artifacts and equipment in situ, priority should be given to preservation or museum entities most closely associated with the station, if they meet loan requirements.

(2) Artifacts associated with, but not located at, the historic light station at the time of conveyance shall remain the personal property of the United States under the administrative control of the Commandant, United States Coast Guard.

(3) All conditions placed with the quitclaim deed of title to the historic light station shall be construed as covenants running with the land.

(4) No submerged lands shall be conveyed under this section.

[16 U.S.C. 470w-7(e) — Definitions]

(e) For purposes of this section:

(1) The term **"Administrator"** shall mean the Administrator of General Services.

(2) The term **"historic light station"** includes the light tower, lighthouse, keepers dwelling, garages, storage sheds, oil house, fog signal building, boat house, barn, pumphouse, tramhouse support structures, piers, walkways, underlying and appurtenant land and related real property and improvements associated therewith; *provided* that the `historic light station' shall be included in or eligible for inclusion in the National Register of Historic Places.

(3) The term **"eligible entity"** shall mean:

(A) any department or agency of the Federal Government; or

(B) any department or agency of the State in which the historic light station is located, the local government of the community in which the historic light station is located, nonprofit corporation, educational agency, or community development organization that —

(i) has agreed to comply with the conditions set forth in subsection (c) and to have such conditions recorded with the deed of title to the historic light station; and

(ii) is financially able to maintain the historic light station in accordance with the conditions set forth in subsection (c).

(4) The term **"Federal aid to navigation"** shall mean any device, operated and maintained by the United States, external to a vessel or aircraft, intended to assist a navigator to determine position or safe course, or to warn of dangers or obstructions to navigation, and shall include, but not be limited to, a light, lens, lantern, antenna, sound signal, camera, sensor, electronic navigation equipment, power source, or other associated equipment.

(5) The term **"Secretary"** means the Secretary of the Interior.

Section 309

[16 U.S.C. 470w-8(a) — Historic Light Station Sales]

(a) In the event no applicants are approved for the conveyance of a historic light station pursuant to section 308, the historic light station shall be offered for sale. Terms of such sales shall be developed by the Administrator of General Services and consistent with the requirements of section 308, subparagraphs (A) through (D) and (H) of subsection (c)(1), and subsection (c)(2). Conveyance documents shall include all necessary covenants to protect the historical integrity of the historic light station and ensure that any Federal aid to navigation located at the historic light station is operated and maintained by the United States for as long as needed for that purpose.

[16 U.S.C. 470w-8(b) — Net sale proceeds]

(b) Net sale proceeds from the disposal of a historic light station —

(1) located on public domain lands shall be transferred to the National Maritime Heritage Grant Program, established by the National Maritime Heritage Act of 1994 (Public Law 103-451) within the Department of the Interior; and

(2) under the administrative control of the Coast Guard shall be credited to the Coast Guard's Operating Expenses appropriation account, and shall be available for obligation and expenditure for the maintenance of light stations remaining under the administrative control of the Coast Guard, such funds to remain available until expended and shall be available in addition to funds available in the Operating Expense appropriation for this purpose.

There are hereby authorized to be appropriated to the Secretary of the Interior such sums as may be necessary to carry out this Act.

TITLE IV

Section 401

[16 U.S.C. 470x — National initiative to coordinate and promote research, distribute information and provide training about preservation skills and technologies]

The Congress finds and declares that, given the complexity of technical problems encountered in preserving historic properties and the lack of adequate distribution of technical information to preserve such properties, a national initiative to coordinate and promote research, distribute information, and provide training about preservation skills and technologies would be beneficial.

Section 402

[16 U.S.C. 470x-1— Definitions]

For the purposes of this title —

(1) The term **"Board"** means the National Preservation Technology and Training Board established pursuant to section 404 of this Act.

(2) The term **"Center"** means the National Center for Preservation Technology and Training established pursuant to section 403 of this Act.

(3) The term **"Secretary"** means the Secretary of the Interior.

Section 403

[16 U.S.C. 470x-2(a) — Establish a National Center for Preservation Technology and Training]

(a) There is hereby established within the Department of the Interior a National Center for Preservation Technology and Training. The Center shall be located at Northwestern State University of Louisiana in Nacthitoches, Louisiana.

[16 U.S.C. 470x-2(b) — Purposes of Center]

(b) The purposes of the Center shall be to —

(1) develop and distribute preservation and conservation skills and technologies for the identification, evaluation, conservation, and interpretation of prehistoric and historic resources;

(2) develop and facilitate training for Federal, State and local resource preservation professionals, cultural resource managers, maintenance personnel, and others working in the preservation field;

(3) take steps to apply preservation technology benefits from ongoing research by other agencies and institutions;

(4) facilitate the transfer of preservation technology among Federal agencies, State and local governments, universities, international organizations, and the private sector; and

(5) cooperate with related international organizations including, but not limited to the International Council on Monuments and Sites, the International Center for the Study of Preservation and Restoration of Cultural Property, and the International Council on Museums.

[16 U.S.C. 470x-2(c) — Programs]

(c) Such purposes shall be carried out through research, professional training, technical assistance, and programs for public awareness, and through a program of grants established under section 405 of this Act.

[16 U.S.C. 470x-2(d) — Executive Director]

(d) The Center shall be headed by an Executive Director with demonstrated expertise in historic preservation appointed by the Secretary with advice of the Board.

[16 U.S.C. 470x-2(e) — Assistance from Secretary]

(e) The Secretary shall provide the Center assistance in obtaining such personnel, equipment, and facilities as may be needed by the Center to carry out its activities.

Section 404

[16 U.S.C. 470x-3(a) — Establish a Preservation Technology and Training Board]

(a) There is established a Preservation Technology and Training Board.

[16 U.S.C. 470x-3(b) — Duties]

(b) The Board shall —

(1) provide leadership, policy advice, and professional oversight to the Center;

(2) advise the Secretary on priorities and the allocation of grants among the activities of the Center; and

(3) submit an annual report to the President and the Congress.

[16 U.S.C. 470x-3(c) — Membership]

(c) The Board shall be comprised of —

(1) The Secretary, or the Secretary's designee;

(2) 6 members appointed by the Secretary who shall represent appropriate Federal, State, and local agencies, State and local historic preservation commissions, and other public and international organizations; and

(3) 6 members appointed by the Secretary on the basis of outstanding professional qualifications who represent major organizations in the fields of archaeology, architecture, conservation, curation, engineering, history, historic preservation, landscape architecture, planning, or preservation education.

Section 405

[16 U.S.C. 470x-4(a) — Grants for research, information distribution and skill training]

(a) The Secretary, in consultation with the Board, shall provide preservation technology and training grants to eligible applicants with a demonstrated institutional capability and commitment to the purposes of the Center, in order to ensure an effective and efficient system of research, information distribution and skills training in all the related historic preservation fields.

[16 U.S.C. 470x-4(b) — Grant Requirements]

(b) (1) Grants provided under this section shall be allocated in such a fashion to reflect the diversity of the historic preservation fields and shall be geographically distributed.

(2) No grant recipient may receive more than 10 percent of the grants allocated under this section within any year.

(3) The total administrative costs, direct and indirect, charged for carrying out grants under this section may not exceed 25 percent of the aggregate costs.

[16 U.S.C. 470x-4(c) — Eligible applicants]

(c) Eligible applicants may include Federal and non-Federal laboratories, accredited museums, universities, non-profit organizations; offices, units, and Cooperative Park Study Units of the National Park System, State Historic Preservation Offices, tribal preservation offices, and Native Hawaiian organizations.

[16 U.S.C. 470x-4(d) — Standards]

(d) All such grants shall be awarded in accordance with accepted professional standards and methods, including peer review of projects.

[16 U.S.C. 470x-4(e) — Authorization of appropriations]

(e) There is authorized to be appropriated to carry out this section such sums as may be necessary.

Section 406

[16 U.S.C. 470x-5(a) — Center may accept grants, donations, and other Federal funds; may enter into contracts and cooperative agreements]

(a) The Center may accept —

(1) grants and donations from private individuals, groups, organizations, corporations, foundations, and other entities; and

(2) transfers of funds from other Federal agencies.

[16 U.S.C. 470x-5(b) — Contracts and cooperative agreements]

(b) Subject to appropriations, the Center may enter into contracts and cooperative agreements with Federal, State, local, and tribal governments, Native Hawaiian organizations, educational institutions, and other public entities to carry out the Center's responsibilities under this title of the Act.

[16 U.S.C. 470x-5(c) — Authorization of appropriations]

(c) There are authorized to be appropriated such sums as may be necessary for the establishment, operation, and maintenance of the Center. Funds for the Center shall be in addition to existing National Park Service programs, centers, and offices.

Section 407

[16 U.S.C. 470x-6 — Improve use of existing NPS centers and regional offices]

In order to improve the use of existing National Park Service resources, the Secretary shall fully utilize and further develop the National Park Service preservation (including conservation) centers and regional offices. The Secretary shall improve the coordination of such centers and offices within the National Park Service, and shall, where appropriate, coordinate their activities with the Center and with other appropriate parties.

[Addendum]

[National Historic Preservation Act Amendments of 1980, Public Law 96-515, December 12, 1980, 94 Stat. 3000

This addendum contains related legislative provisions enacted in the National Historic Preservation Act Amendments of 1980 but that are not part of the National Historic Preservation Act.]

Section 401

[16 U.S.C. 470a-1(a) — International activities and World Heritage Convention]

(a) The Secretary of the Interior shall direct and coordinate United States participation in the Convention Concerning the Protection of the World Cultural and Natural Heritage, approved by the Senate on October 26, 1973, in cooperation with the Secretary of State, the Smithsonian Institution, and the Advisory Council on Historic Preservation. Whenever possible, expenditures incurred in carrying out activities in cooperation with other nations and international organizations shall be paid for in such excess currency of the country or area where the expense is incurred as may be available to the United States.

[16 U.S.C. 470a-1(b) — Nominations of properties to World Heritage List]

(b) The Secretary of the Interior shall periodically nominate properties he determines are of international significance to the World Heritage Committee on behalf of the United States. No property may be so nominated unless it has previously been determined to be of national significance. Each such nomination shall include evidence of such legal protections as may be necessary to ensure preservation of the property and its environment (including restrictive covenants, easements, or other forms of protection). Before making any such nomination, the Secretary shall notify the Committee on Natural Resources of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate.

[16 U.S.C. 470a-1(c) — Concurrence of non-Federal property]

(c) No non-Federal property may be nominated by the Secretary of the Interior to the World Heritage Committee for inclusion on the World Heritage List unless the owner of the property concurs in writing to such nomination.

Section 402

[16 U.S.C. 470a-2 — International Federal activities affecting historic properties]

Prior to the approval of any Federal undertaking outside the United States which may directly and adversely affect a property which is on the World Heritage List or on the applicable country's equivalent of the National Register, the head of a Federal agency having direct or indirect jurisdiction over such undertaking shall take into account the effect of the undertaking on such property for purposes of avoiding or mitigating any adverse effects.

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(36 CFR Part 63)

outlined in § 62.4(d)(1), (2) and (3). The NPS is responsible for preparing and distributing the written notices. The NPS periodically publishes notice(s) of removal in the FEDERAL REGISTER. The NPS may reclaim the natural landmark plaque when a landmark is removed from the National Registry of Natural Landmarks.

(f) *Previously designated landmarks.* (1) NPS will notify owners of national natural landmarks designated before the effective date of these regulations to give them an opportunity within 90 days of the notice to request the removal of a national natural landmark designation from their property by writing to the Director. If owners do not respond within 90 days of the notification, the national natural landmark designations of their properties will be retained.

(2) When only some owners of a national natural landmark in multiple ownership request the removal of a national natural landmark designation from their portions, the NPS determines whether, after removal of these portions, a sufficient acreage of the national natural landmark remains to demonstrate the original nationally significant features without undue compromise. If so, the boundaries of the national natural landmark are adjusted to remove the properties of owners who object to the designation. If not, the entire national natural landmark designation is removed and the area is removed from the National Registry of Natural Landmarks.

(3) Any removals of existing national natural landmark designations and related recommended boundary adjustments, must be presented by the Director to the National Park System Advisory Board for review before being presented to the Secretary who formally removes a national natural landmark from the national registry or approves changes in the national natural landmark boundary. Areas from which the designation has been removed may be reconsidered for designation under these regulations if ownership or other circumstances change.

§ 62.9 General provisions.

(a) *Agreements.* The NPS may enter into contracts, memoranda of agreement, cooperative agreements, or other types of agreements with other Federal agencies, States, counties, local communities, private organizations, owners, Native American tribal governments, or other interested individuals or groups to assist in administering the National Natural Landmarks Program. The agreements may include but are not limited to provisions about identification, evaluation, monitoring or protecting national natural landmarks.

(b) *Information dissemination.* The NPS may conduct educational and scientific activities to disseminate information on national natural landmarks, the National Natural Landmarks Program, and the benefits derived from systematic surveys of significant natural features to the general public and to interested local, State and Federal agencies and private groups. Dissemination of information on ecologically or geologically fragile or sensitive areas may be restricted when release of the information may endanger or harm the sensitive resources.

(c) *Procedural requirements.* Any individual, agency, or organization acting as a representative of the NPS in the identification, evaluation, monitoring or protection of national natural landmarks is required to follow this part.

(d) *Additional program information.* Further guidance on the operation of the National Natural Landmarks Program, as based on this part, may be found in other program documents that are available from the NPS.

(e) *Administrative recourse.* Any person has the right to insist that NPS take into account all the provisions in this part for national natural landmark designation or removal.

PART 63—DETERMINATIONS OF ELIGIBILITY FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES

Sec.

63.1 Purpose and authorities.
63.2 Determination of eligibility process.
63.3 Procedures to be applied when the agency and the State Historic Preservation Officer agree a property is eligible.
63.4 Other properties on which determinations of eligibility may be made by the Secretary of the Interior.

63.5 FEDERAL REGISTER publication of properties determined eligible.
63.6 Review and nomination of properties determined eligible.

AUTHORITY: Sec. 2(k), Historic Sites Act of 1935, 16 U.S.C. 462(K) (1970 ed); sec. 101(a)(1), National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470(a)(1) (1970 ed); secs. 3(b) and 4(f), E.O. 11593; sec. 2 of Reorganization Plan No. 3 of 1950 (34 Stat. 1262).

SOURCE: 42 FR 47661, Sept. 21, 1977. Redesignated at 45 FR 28716, Apr. 30, 1980, and 46 FR 34329, July 1, 1981, unless otherwise noted.

§ 63.1 Purpose and authorities.

(a) These regulations have been developed to assist Federal agencies in identifying and evaluating the eligibility of properties for inclusion in the National Register. The regulations explain how to request determinations of eligibility under section 2(b) of Executive Order 11593 and the regulations of the Advisory Council on Historic Preservation (36 CFR part 800) for implementation of sections 1(3) and 2(b) of Executive Order 11593 and the National Historic Preservation Act of 1966, as amended Federal agencies request determinations of eligibility in considering historic properties on lands under their jurisdiction or control or on lands to be affected by proposed actions.

§ 63.2 Determination of eligibility process.

The Department of the Interior will respond within 45 days of receipt of a documented request for a determination of eligibility from a Federal agency when it is submitted in accordance with the following regulations and is accompanied by documentation that clearly portrays the nature and significance of the property.

(a) The agency shall consult the State Historic Preservation Officer as the first step in identifying historic properties for information concerning:

(1) Properties listed in the National Register.

(2) Properties in the process of nomination to the National Register.

(3) Properties determined eligible by the Secretary of the Interior for listing in the National Register.

(4) Any other available information that would assist in identifying properties in the area affected by the proposed action.

(b) If the State Historic Preservation Officer has inadequate information to document the presence or absence of historic properties in the project area, the Federal agency should refer to the Department of the Interior's criteria for the identification of historic properties and the guidelines for level of documentation to accompany requests for determinations of eligibility for inclusion in the National Register published as a notice in the FEDERAL REGISTER.

(c) The agency shall, in consultation with the State Historic Preservation Officer, apply the National Register Criteria for Evaluation contained in 36 CFR 60.6 to all potentially eligible properties that may be affected by the proposed action. If a property appears to meet the Criteria and the State Historic Preservation Officer agrees, the agency should follow the procedures in § 63.3. If there is a question whether the Criteria are met, the agency shall complete the procedures in § 63.3(d). A question on whether a property meets the Criteria exists when the agency and the State Historic Preservation Officer disagree or when the agency determines that a question exists. The Department of the Interior will provide general and specific advice concerning the identification of historic properties and will bring to the attention of a Federal agency any information received from the public regarding potential historic properties in the area affected by its plans or projects.

(d) The agency shall submit a letter of request for a determination of eligiblity with a description, statement of significance, photographs, and a map, or a statement in accord with § 63.3 below, if applicable, directly to the Keeper of the National Register, National Park Service, Department of the Interior, Washington, D.C. 20240. If available, the opinion of the State Historic Preservation Officer on the eligibility of the property should also be forwarded with the request.

(e) The Keeper, National Register, will respond in writing to the agency's request within 45 days of receipt of a documented request submitted in accord with § 63.2(d) of these procedures. If the opinion of the State Historic Preservation Officer is not included

with the request, the Keeper of the National Register will provide to the State Historic Preservation Officer a copy of the request and will ask for his opinion on the property. If the Keeper does not receive the State Historic Preservation Officer's response within three weeks of the State Historic Preservation Officer's receipt of a letter from the Keeper requesting an opinion, the Keeper will proceed with the determination and will inform the agency that the State Historic Preservation Officer did not give an opinion. If the Keeper of the National Register determines that documentation submitted with the request is not sufficient to make a professional evaluation of the significance of the property, he will advise the agency in writing of the additional information needed. The Keeper of the National Register will respond to the agency's request within 45 days of receipt of documentation on the property requested by the Keeper.

§ 63.3 Procedures to be applied when the Agency and the State Historic Preservation Officer agree a property is eligible.

If during the consultation described in § 63.2(c), both the agency and the State Historic Preservation Officer agree that a property meets the Criteria, the Federal agency or the State Historic Preservation Officer shall forward to the Keeper of the National Register (a) a letter signed by the agency stating that the agency and the State Historic Preservation Officer agree that the property is eligible for inclusion in the National Register, and (b) a statement signed by the State Historic Preservation Officer that in his opinion the property is eligible for the National Register. Either the letter or the statement must contain substantive information on the property, including a description, specific boundaries, its significance under National Register Criteria, and an explanation of why the property is eligible for listing in the National Register. The Keeper of the National Register shall give written notice of his determination to both the agency and the State Historic Preservation Officer within 10 working days of receipt. If the property has not been accurately identified and evaluated, the Keeper will inform the agency and the State Historic Preservation Officer within 10 working days and will recommend that the agency follow the process set forth at § 63.2. Notwithstanding such recommendation, the Federal agency or the Keeper of the National Register may consider the property eligible for the purpose of obtaining the Advisory Council on Historic Preservation's comments. Documentation concerning properties determined eligible for the National Register shall be kept on file by the agency and the State Historic Preservation Officer.

§ 63.4 Other properties on which determinations of eligibility may be made by the Secretary of the Interior.

(a) The Keeper of the National Register will make determinations of eligibility on properties nomiated by Federal agencies under section 2(a) of Executive Order 11593 prior to returning the nominations for such properties to the agency for technical or professional revision or because of procedural requirements. Such determinations of eligibility will be made only if sufficient information exists to establish the significance of the property and its eligibility for the National Register

(b) Any property or district removed from the National Register for procedural deficiences in the nomination and/or listing process shall automatically be considered eligible for inclusion in the National Register without further action and will be published as such in the FEDERAL REGISTER.

(c) If necessary to assist in the protection of historic resources, the Keeper, upon consultation with the appropriate State Historic Preservation Officer and concerned Federal agency, if any, may determine properties to be eligible for listing in the National Register under the Criteria established by 36 CFR part 60 and shall publish such determinations in the FEDERAL REGISTER. Such determinations may be made without a specific request from the Federal agency or, in effect, may reverse findings on eligibility made by a Federal agency and State Historic

Preservation Officer. Such determinations will be made after an investigation and an onsite inspection of the property in question.

§ 63.5 Federal Register publication of properties determined eligible.

In addition to written notice to the Federal agency and the State Historic Preservation Officer, public notice of properties determined eligible for the National Register will be published in the FEDERAL REGISTER at regular intervals and in a cumulative annual edition usually issued in February. Determinations in accord with § 63.3 will be identified with an asterisk.

§ 63.6 Review and nomination of properties determined eligible.

The Keeper of the National Register will conduct an annual review of the condition of properties determined eligible for the National Register. The Keeper of the National Register will obtain from the Advisory Council on Historic Preservation information on decisions made concerning eligible properties in accord with memorandum of agreement under the Council's ''Procedures for the Protection of Historic and Cultural Properties'' (36 CFR part 800). If there is no memorandum of agreement or if no provision has been made in a memorandum of agreement for nomination of an eligible property and if the property retains the characteristics that made it eligible for the National Register, the Keeper of the National Register will take the following steps:

(a) For a property owned by a Federal agency, or under the jurisdiction or control of the agency to the extent that the agency substantially exercises the attributes of ownership, the Keeper of the National Register will request the Federal agency to nominate the property to the National Register within six months.

(b) If the property is not under Federal jurisdiction or control, the Keeper of the National Register will request that the State Historic Preservation Office nominate the property to the National Register within six months.

(c) If the Keeper of the National Register determines that a property has lost the characteristics that made it eligible for the National Register, he will inform the State Historic Preservation Officer and the Federal agency and remove the property from the list of eligible properties.

PART 64—GRANTS AND ALLOCATIONS FOR RECREATION AND CONSERVATION USE OF ABANDONED RAILROAD RIGHTS-OF-WAY

Sec.

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AUTHORITY: Sec. 809(B)(2) and (3), 90 Stat. 145, Pub. L. 94–210; Sec. 2 of Reorganization Plan No. 3 of 1950 (34 Stat. 1262).

SOURCE: 42 FR 54806, Oct. 11, 1977. Redesignated at 45 FR 780, Jan. 3, 1980, and 46 FR 34329, July 1, 1981, unless otherwise noted.

§ 64.1 Purpose.

The purpose of these guidelines is to prescribe policies and procedures for administering the funding of projects involving the conversion of abandoned railroad rights-of-way to recreation and conservation uses. Because of the limited funding available, it is the Bureau of Outdoor Recreation's intent to select a few projects which effectively demonstrate the conversion of abandoned railroad rights-of-way for recreation and conservation purposes in a timely manner.

§ 64.2 Definitions.

(a) *Abandoned Railroad Rights-of-Way.* An abandoned railroad right-of-way is

Protection of Historic Properties
(36 CFR Part 800)

36 CFR PART 800 -- PROTECTION OF HISTORIC PROPERTIES (incorporating amendments effective August 5, 2004)

Subpart A -- Purposes and Participants

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Authority: 16 U.S.C. 470s.

Subpart A-Purposes and Participants

§ 800.1 Purposes.

(a) *Purposes of the section 106 process*. Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council a reasonable opportunity to comment on such undertakings. The procedures in this part define how Federal agencies meet these statutory responsibilities. The section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.

(b) *Relation to other provisions of the act*. Section 106 is related to other provisions of the act designed to further the national policy of historic preservation. References to those provisions are included in this part to identify circumstances where they may affect actions taken to meet section 106 requirements. Such provisions may have their own implementing regulations or guidelines and are not intended to be implemented by the procedures in this part except insofar as they relate to the section 106 process. Guidelines, policies and procedures issued by other agencies, including the Secretary, have been cited in this part for ease of access and are not incorporated by reference.

(c) *Timing*. The agency official must complete the section 106 process "prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license." This does not prohibit agency official from conducting or authorizing nondestructive project planning activities before completing compliance with section 106, provided that such actions do not restrict the subsequent consideration of alternatives to avoid, minimize or mitigate the undertaking's adverse effects on historic properties. The agency official shall ensure that the section 106 process is initiated early in the undertaking's planning, so that a broad range of alternatives may be considered during the planning process for the undertaking.

§ 800.2 Participants in the Section 106 process.

(a) *Agency official*. It is the statutory obligation of the Federal agency to fulfill the requirements of section 106 and to ensure that an agency official with jurisdiction over an undertaking takes legal and financial responsibility for section 106 compliance in accordance with subpart B of this part. The agency official has approval authority for the undertaking and can commit the Federal agency to take appropriate action for a specific undertaking as a result of section 106 compliance. For the purposes of subpart C of this part, the agency official has the authority to commit the Federal agency to any obligation it may assume in the implementation of a program alternative. The agency official may be a State, local, or tribal government official who has been delegated legal responsibility for compliance with section 106 in accordance with Federal law.

(1) *Professional standards*. Section 112(a)(1)(A) of the act requires each Federal agency responsible for the protection of historic resources, including archeological resources, to ensure that all actions taken by employees or contractors of the agency shall meet professional standards under regulations developed by the Secretary.

(2) *Lead Federal agency*. If more than one Federal agency is involved in an undertaking, some or all the agencies may designate a lead Federal agency, which shall identify the appropriate official to serve as the agency official who shall act on their behalf, fulfilling their collective responsibilities under section 106. Those Federal agencies that do not designate a lead Federal agency remain individually responsible for their compliance with this part.

(3) *Use of contractors*. Consistent with applicable conflict of interest laws, the agency official may use the services of applicants, consultants, or designees to prepare information, analyses and recommendations under this part. The agency official remains legally responsible for all required findings and determinations. If a document or study is prepared by a non-Federal party, the agency official is responsible for ensuring that its content meets applicable standards and guidelines.

(4) *Consultation*. The agency official shall involve the consulting parties described in paragraph (c) of this section in findings and determinations made during the section 106 process. The agency official should plan consultations appropriate to the scale of the undertaking and the scope of Federal involvement and coordinated with other requirements of other statutes, as applicable, such as the National Environmental Policy Act, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, the Archeological Resources Protection Act and agency-specific legislation. The Council encourages the agency official to use to the extent possible existing agency procedures and mechanisms to fulfill the consultation requirements of this part.

(b) *Council*. The Council issues regulations to implement section 106,

provides guidance and advice on the application of the procedures in this part, and generally oversees the operation of the section 106 process. The Council also consults with and comments to agency officials on individual undertakings and programs that affect historic properties.

(1) *Council entry into the section 106 process*. When the Council determines that its involvement is necessary to ensure that the purposes of section 106 and the act are met, the Council may enter the section 106 process. Criteria guiding Council decisions to enter the section 106 process are found in appendix A to this part. The Council will document that the criteria have been met and notify the parties to the section 106 process as required by this part.

(2) *Council assistance*. Participants in the section 106 process may seek advice, guidance and assistance from the Council on the application of this part to specific undertakings, including the resolution of disagreements, whether or not the Council is formally involved in the review of the undertaking. If questions arise regarding the conduct of the section 106 process, participants are encouraged to obtain the Council's advice on completing the process.

(c) *Consulting parties*. The following parties have consultative roles in the section 106 process.

(1) *State historic preservation officer*.

(i) The State historic preservation officer (SHPO) reflects the interests of the State and its citizens in the preservation of their cultural heritage. In accordance with section 101(b)(3) of the act, the SHPO advises and assists Federal agencies in carrying out their section 106 responsibilities and cooperates with such agencies, local governments and organizations and individuals to ensure that historic properties are taking into consideration at all levels of planning and development.

(ii) If an Indian tribe has assumed the functions of the SHPO in the section 106 process for undertakings on tribal lands, the SHPO shall participate as a consulting party if the undertaking takes place on tribal lands but affects historic properties off tribal lands, if requested in accordance with § 800.3(c)(1), or if the Indian tribe agrees to include the SHPO pursuant to § 800.3(f)(3).

(2) *Indian tribes and Native Hawaiian organizations*.

(i) *Consultation on tribal lands*.

(A) *Tribal historic preservation officer*. For a tribe that has assumed the responsibilities of the SHPO for section 106 on tribal lands under section 101(d)(2) of the act, the tribal historic preservation officer (THPO) appointed or designated in accordance with the act is the official representative for the purposes of section 106. The agency official shall consult with the THPO in lieu of the SHPO regarding undertakings occurring on or affecting historic properties on tribal lands.

(B) *Tribes that have not assumed SHPO functions*. When an Indian tribe has not assumed the responsibilities of the SHPO for section 106 on tribal lands under section 101(d)(2) of the act, the agency official shall consult with a representative designated by such Indian tribe in addition to the SHPO regarding undertakings occurring on or affecting historic properties on its tribal lands. Such Indian tribes have the same rights of consultation and concurrence that the THPOs are given throughout subpart B of this part, except that such consultations shall be in addition to and on the same basis as consultation with the SHPO.

(ii) *Consultation on historic properties of significance to Indian tribes and Native Hawaiian organizations*. Section 101(d)(6)(B) of the act requires the agency official to consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by an undertaking. This requirement applies regardless of the location of the historic property. Such Indian tribe or Native Hawaiian organization shall be a consulting party.

(A) The agency official shall ensure that consultation in the section 106 process provides the Indian tribe or Native Hawaiian organization a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects. It is the responsibility of the agency official to make a reasonable and good faith effort to identify Indian tribes and Native Hawaiian organizations that shall be consulted in the section 106 process. Consultation should commence early in the planning process, in order to identify and discuss relevant preservation issues and resolve concerns about the confidentiality of information on historic properties.

(B) The Federal Government has a unique legal relationship with Indian tribes set forth in the Constitution of the United States, treaties, statutes, and court decisions. Consultation with Indian tribes should be conducted in a sensitive manner respectful of tribal sovereignty. Nothing in this part alters, amends, repeals, interprets or modifies tribal sovereignty, any treaty rights, or other rights of an Indian tribe, or preempts, modifies or limits the exercise of any such rights.

(C) Consultation with an Indian tribe must recognize the government-to-government relationship between the Federal Government and Indian tribes. The agency official shall consult with representatives designated or identified by the tribal government or the governing body of a Native Hawaiian organization. Consultation with Indian tribes and Native Hawaiian organizations should be conducted in a manner sensitive to the concerns and needs of the Indian tribe or Native Hawaiian organization.

(D) When Indian tribes and Native Hawaiian organizations attach religious and cultural significance to historic properties off tribal lands, section 101(d)(6)(B) of the act requires Federal agencies to consult with such Indian tribes and Native Hawaiian organizations in the section 106 process. Federal agencies should be aware that frequently historic properties of religious and cultural significance are located on ancestral, aboriginal, or ceded lands of Indian tribes and Native Hawaiian organizations and should consider that when complying with the procedures in this part.

(E) An Indian tribe or a Native Hawaiian organization may enter into an agreement with an agency official that specifies how they will carry out responsibilities under this part, including concerns over the confidentiality of information. An agreement may cover all aspects of tribal participation in the section 106 process, provided that no modification may be made in the roles of other parties to the section 106 process without their consent. An agreement may grant the Indian tribe or Native Hawaiian organization additional rights to participate or concur in agency decisions in the section 106 process beyond those specified in subpart B of this part. The agency official shall

provide a copy of any such agreement to the Council and the appropriate SHPOs.

(F) An Indian tribe that has not assumed the responsibilities of the SHPO for section 106 on tribal lands under section 101(d)(2) of the act may notify the agency official in writing that it is waiving its rights under § 800.6(c)(1) to execute a memorandum of agreement.

(3) *Representatives of local governments*. A representative of a local government with jurisdiction over the area in which the effects of an undertaking may occur is entitled to participate as a consulting party. Under other provisions of Federal law, the local government may be authorized to act as the agency official for purposes of section 106.

(4) *Applicants for Federal assistance, permits, licenses and other approvals*. An applicant for Federal assistance or for a Federal permit, license or other approval is entitled to participate as a consulting party as defined in this part. The agency official may authorize an applicant or group of applicants to initiate consultation with the SHPO/THPO and others, but remains legally responsible for all findings and determinations charged to the agency official. The agency official shall notify the SHPO/THPO when an applicant or group of applicants is so authorized. A Federal agency may authorize all applicants in a specific program pursuant to this section by providing notice to all SHPO/THPOs. Federal agencies that provide authorizations to applicants remain responsible for their government to government relationships with Indian tribes.

(5) *Additional consulting parties*. Certain individuals and organizations with a demonstrated interest in the undertaking may participate as consulting parties due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties.

(d) *The public*.

(1) *Nature of involvement*. The views of the public are essential to informed Federal decisionmaking in the section 106 process. The agency official shall seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties, the likely interest of the public in the effects on historic properties, confidentiality concerns of private individuals and businesses, and the relationship of the Federal involvement to the undertaking.

(2) *Providing notice and information*. The agency official must, except where appropriate to protect confidentiality concerns of affected parties, provide the public with information about an undertaking and its effects on historic properties and seek public comment and input. Members of the public may also provide views on their own initiative for the agency official to consider in decisionmaking.

(3) *Use of agency procedures*. The agency official may use the agency's procedures for public involvement under the National Environmental Policy Act or other program requirements in lieu of public involvement requirements in subpart B of this part, if they provide adequate opportunities for public involvement consistent with this subpart.

Subpart B-The section 106 Process

§ 800.3 Initiation of the section 106 process.

(a) *Establish undertaking*. The agency official shall determine whether the proposed Federal action is an undertaking as defined in § 800.16(y) and, if so, whether it is a type of activity that has the potential to cause effects on historic properties.

(1) *No potential to cause effects*. If the undertaking is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, the agency official has no further obligations under section 106 or this part.

(2) *Program alternatives*. If the review of the undertaking is governed by a Federal agency program alternative established under § 800.14 or a programmatic agreement in existence before January 11, 2001, the agency official shall follow the program alternative.

(b) *Coordinate with other reviews*. The agency official should coordinate the steps of the section 106 process, as appropriate, with the overall planning schedule for the undertaking and with any reviews required under other authorities such as the National Environmental Policy Act, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, the Archeological Resources Protection Act and agency-specific legislation, such as section 4(f) of the Department of Transportation Act. Where consistent with the procedures in this subpart, the agency official may use information developed for other reviews under Federal, State or tribal law to meet the requirements of section 106.

(c) *Identify the appropriate SHPO and/or THPO*. As part of its initial planning, the agency official shall determine the appropriate SHPO or SHPOs to be involved in the section 106 process. The agency official shall also determine whether the undertaking may occur on or affect historic properties on any tribal lands and, if so, whether a THPO has assumed the duties of the SHPO. The agency official shall then initiate consultation with the appropriate officer or officers.

(1) *Tribal assumption of SHPO responsibilities*. Where an Indian tribe has assumed the section 106 responsibilities of the SHPO on tribal lands pursuant to section 101(d)(2) of the act, consultation for undertakings occurring on tribal land or for effects on tribal land is with the THPO for the Indian tribe in lieu of the SHPO. Section 101(d)(2)(D)(iii) of the act authorizes owners of properties on tribal lands which are neither owned by a member of the tribe nor held in trust by the Secretary for the benefit of the tribe to request the SHPO to participate in the section 106 process in addition to the THPO.

(2) *Undertakings involving more than one State*. If more than one State is involved in an undertaking, the involved SHPOs may agree to designate a lead SHPO to act on their behalf in the section 106 process, including taking actions that would conclude the section 106 process under this subpart.

(3) *Conducting consultation*. The agency official should consult with the SHPO/THPO in a manner appropriate to the agency planning process for the undertaking and to the nature of the undertaking and its effects on historic properties.

(4) *Failure of the SHPO/THPO to respond*. If the SHPO/THPO fails to respond within 30 days of receipt of a request for review of a finding or determination, the agency official may either proceed to the next step in the process based on the finding or determination or consult with the Council in lieu of the SHPO/THPO. If the SHPO/THPO re-enters the section 106 process, the agency official shall continue the consultation without being required to reconsider previous findings or determinations.

(d) *Consultation on tribal lands*. Where the Indian tribe has not assumed the responsibilities of the SHPO on tribal lands, consultation with the Indian tribe regarding undertakings occurring on such tribe's lands or effects on such tribal lands shall be in addition to and on the same basis as consultation with the SHPO. If the SHPO has withdrawn from the process, the agency official may complete the section 106 process with the Indian tribe and the Council, as appropriate. An Indian tribe may enter into an agreement with a SHPO or SHPOs specifying the SHPO's participation in the section 106 process for undertakings occurring on or affecting historic properties on tribal lands.

(e) *Plan to involve the public*. In consultation with the SHPO/THPO, the agency official shall plan for involving the public in the section 106 process. The agency official shall identify the appropriate points for seeking public input and for notifying the public of proposed actions, consistent with § 800.2(d).

(f) *Identify other consulting parties*. In consultation with the SHPO/THPO, the agency official shall identify any other parties entitled to be consulting parties and invite them to participate as such in the section 106 process. The agency official may invite others to participate as consulting parties as the section 106 process moves forward.

(1) *Involving local governments and applicants*. The agency official shall invite any local governments or applicants that are entitled to be consulting parties under § 800.2(c).

(2) *Involving Indian tribes and Native Hawaiian organizations*. The agency official shall make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties. Such Indian tribe or Native Hawaiian organization that requests in writing to be a consulting party shall be one.

(3) *Requests to be consulting parties*. The agency official shall consider all written requests of individuals and organizations to participate as consulting parties and, in consultation with the SHPO/THPO and any Indian tribe upon whose tribal lands an undertaking occurs or affects historic properties, determine which should be consulting parties.

(g) *Expediting consultation*. A consultation by the agency official with the SHPO/THPO and other consulting parties may address multiple steps in §§ 800.3 through 800.6 where the agency official and the SHPO/THPO agree it is appropriate as long as the consulting parties and the public have an adequate opportunity to express their views as provided in § 800.2(d).

§ 800.4 Identification of historic properties.

(a) *Determine scope of identification efforts*. In consultation with the SHPO/THPO, the agency official shall:

(1) Determine and document the area of potential effects, as defined in § 800.16(d);

(2) Review existing information on historic properties within the area of potential effects, including any data concerning possible historic properties not yet identified;

(3) Seek information, as appropriate, from consulting parties, and other individuals and organizations likely to have knowledge of, or concerns with, historic properties in the area, and identify issues relating to the undertaking's potential effects on historic properties; and

(4) Gather information from any Indian tribe or Native Hawaiian organization identified pursuant to § 800.3(f) to assist in identifying properties, including those located off tribal lands, which may be of religious and cultural significance to them and may be eligible for the National Register, recognizing that an Indian tribe or Native Hawaiian organization may be reluctant to divulge specific information regarding the location, nature, and activities associated with such sites. The agency official should address concerns raised about confidentiality pursuant to § 800.11(c).

(b) *Identify historic properties*. Based on the information gathered under paragraph (a) of this section, and in consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that might attach religious and cultural significance to properties within the area of potential effects, the agency official shall take the steps necessary to identify historic properties within the area of potential effects.

(1) *Level of effort*. The agency official shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. The agency official shall take into account past planning, research and studies, the magnitude and nature of the undertaking and the degree of Federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the area of potential effects. The Secretary's Standards and Guidelines for Identification provide guidance on this subject. The agency official should also consider other applicable professional, State, tribal and local laws, standards and guidelines. The agency official shall take into account any confidentiality concerns raised by Indian tribes or Native Hawaiian organizations during the identification process.

(2) *Phased identification and evaluation*. Where alternatives under consideration consist of corridors or large land areas, or where access to properties is restricted, the agency official may use a phased process to conduct identification and evaluation efforts. The agency official may also defer final identification and evaluation of historic properties if it is specifically provided for in a memorandum of agreement executed pursuant to § 800.6, a programmatic agreement executed pursuant to § 800.14 (b), or the documents used by an agency official to comply with the National Environmental Policy Act pursuant to § 800.8. The process should establish the likely presence of historic properties within the area of potential effects for each alternative or inaccessible area through background research, consultation and an appropriate level of field investigation, taking into account the number of alternatives under consideration, the magnitude of the undertaking and its likely effects, and the views of the SHPO/THPO and any other consulting parties. As specific aspects or locations of an alternative are refined or access is gained, the agency official shall proceed with the identification and evaluation of historic properties in accordance with paragraphs (b)(1) and (c) of this section.

(c) *Evaluate historic significance*.

(1) *Apply National Register criteria*. In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified properties and guided by the Secretary's Standards and Guidelines for Evaluation, the agency official shall

apply the National Register criteria (36 CFR part 63) to properties identified within the area of potential effects that have not been previously evaluated for National Register eligibility. The passage of time, changing perceptions of significance, or incomplete prior evaluations may require the agency official to reevaluate properties previously determined eligible or ineligible. The agency official shall acknowledge that Indian tribes and Native Hawaiian organizations possess special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them.

(2) *Determine whether a property is eligible*. If the agency official determines any of the National Register criteria are met and the SHPO/THPO agrees, the property shall be considered eligible for the National Register for section 106 purposes. If the agency official determines the criteria are not met and the SHPO/THPO agrees, the property shall be considered not eligible. If the agency official and the SHPO/THPO do not agree, or if the Council or the Secretary so request, the agency official shall obtain a determination of eligibility from the Secretary pursuant to 36 CFR part 63. If an Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to a property off tribal lands does not agree, it may ask the Council to request the agency official to obtain a determination of eligibility.

(d) *Results of identification and evaluation*.

(1) *No historic properties affected*. If the agency official finds that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in § 800.16(i), the agency official shall provide documentation of this finding, as set forth in § 800.11(d), to the SHPO/THPO. The agency official shall notify all consulting parties, including Indian tribes and Native Hawaiian organizations, and make the documentation available for public inspection prior to approving the undertaking.

(i) If the SHPO/THPO, or the Council if it has entered the section 106 process, does not object within 30 days of receipt of an adequately documented finding, the agency official's responsibilities under section 106 are fulfilled.

(ii) If the SHPO/THPO objects within 30 days of receipt of an adequately documented finding, the agency official shall either consult with the objecting party to resolve the disagreement, or forward the finding and supporting documentation to the Council and request that the Council review the finding pursuant to paragraphs (d)(1)(iv)(A) through (d)(1)(iv)(C) of this section. When an agency official forwards such requests for review to the Council, the agency official shall concurrently notify all consulting parties that such a request has been made and make the request documentation available to the public.

(iii) During the SHPO/THPO 30 day review period, the Council may object to the finding and provide its opinion regarding the finding to the agency official and, if the Council determines the issue warrants it, the head of the agency. A Council decision to provide its opinion to the head of an agency shall be guided by the criteria in appendix A to this part. The agency shall then proceed according to paragraphs (d)(1)(iv)(B) and (d)(1)(iv)(C) of this section.

(iv)(A) Upon receipt of the request under paragraph (d)(1)(ii) of this section, the Council will have 30 days in which to review the finding and provide the agency official and, if the Council determines the issue warrants it, the head of the agency with the Council's opinion regarding the finding. A Council decision to provide its opinion to the head of an agency shall be guided by the criteria in appendix A to this part. If the Council does not respond within 30 days of receipt of the request, the agency official's responsibilities under section 106 are fulfilled.

(B) The person to whom the Council addresses its opinion (the agency official or the head of the agency) shall take into account the Council's opinion before the agency reaches a final decision on the finding.

(C) The person to whom the Council addresses its opinion (the agency official or the head of the agency) shall then prepare a summary of the decision that contains the rationale for the decision and evidence of consideration of the Council's opinion, and provide it to the Council, the SHPO/THPO, and the consulting parties. The head of the agency may delegate his or her duties under this paragraph to the agency's senior policy official. If the agency official's initial finding will be revised, the agency official shall proceed in accordance with the revised finding. If the final decision of the agency is to affirm the initial agency finding of no historic properties affected, once the summary of the decision has been sent to the Council, the SHPO/THPO, and the consulting parties, the agency official's responsibilities under section 106 are fulfilled.

(D) The Council shall retain a record of agency responses to Council opinions on their findings of no historic properties affected. The Council shall make this information available to the public.

(2) *Historic properties affected*. If the agency official finds that there are historic properties which may be affected by the undertaking, the agency official shall notify all consulting parties, including Indian tribes or Native Hawaiian organizations, invite their views on the effects and assess adverse effects, if any, in accordance with § 800.5.

§ 800.5 Assessment of adverse effects.

(a) *Apply criteria of adverse effect*. In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the agency official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The agency official shall consider any views concerning such effects which have been provided by consulting parties and the public.

(1) *Criteria of adverse effect*. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

(2) *Examples of adverse effects*. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;

(iii) Removal of the property from its historic location;

(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

(3) *Phased application of criteria*. Where alternatives under consideration consist of corridors or large land areas, or where access to properties is restricted, the agency official may use a phased process in applying the criteria of adverse effect consistent with phased identification and evaluation efforts conducted pursuant to § 800.4(b)(2).

(b) *Finding of no adverse effect*. The agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines, to avoid adverse effects.

(c) *Consulting party review*. If the agency official proposes a finding of no adverse effect, the agency official shall notify all consulting parties of the finding and provide them with the documentation specified in § 800.11(e). The SHPO/THPO shall have 30 days from receipt to review the finding.

(1) *Agreement with, or no objection to, finding*. Unless the Council is reviewing the finding pursuant to paragraph (c)(3) of this section, the agency official may proceed after the close of the 30 day review period if the SHPO/THPO has agreed with the finding or has not provided a response, and no consulting party has objected. The agency official shall then carry out the undertaking in accordance with paragraph (d)(1) of this section.

(2) *Disagreement with finding*.

(i) If within the 30 day review period the SHPO/THPO or any consulting party notifies the agency official in writing that it disagrees with the finding and specifies the reasons for the disagreement in the notification, the agency official shall either consult with the party to resolve the disagreement, or request the Council to review the finding pursuant to paragraphs (c)(3)(i) and (c)(3)(ii) of this section. The agency official shall include with such request the documentation specified in § 800.11(e). The agency official shall also concurrently notify all consulting parties that such a submission has been made and make the submission documentation available to the public.

(ii) If within the 30 day review period the Council provides the agency official and, if the Council determines the issue warrants it, the head of the agency, with a written opinion objecting to the finding, the agency shall then proceed according to paragraph (c)(3)(ii) of this section. A Council decision to provide its opinion to the head of an agency shall be guided by the criteria in appendix A to this part.

(iii) The agency official should seek the concurrence of any Indian tribe or Native Hawaiian organization that has made known to the agency official that it attaches religious and cultural significance to a historic property subject to the finding. If such Indian tribe or Native Hawaiian organization disagrees with the finding, it may within the 30 day review period specify the reasons for disagreeing with the finding and request the Council to review and object to the finding pursuant to paragraph (c)(2)(ii) of this section.

(3) *Council review of findings*.

(i) When a finding is submitted to the Council pursuant to paragraph (c)(2)(i) of this section, the Council shall review the finding and provide the agency official and, if the Council determines the issue warrants it, the head of the agency with its opinion as to whether the adverse effect criteria have been correctly applied. A Council decision to provide its opinion to the head of an agency shall be guided by the criteria in appendix A to this part. The Council will provide its opinion within 15 days of receiving the documented finding from the agency official. The Council at its discretion may extend that time period for 15 days, in which case it shall notify the agency of such extension prior to the end of the initial 15 day period. If the Council does not respond within the applicable time period, the agency official's responsibilities under section 106 are fulfilled.

(ii)(A) The person to whom the Council addresses its opinion (the agency official or the head of the agency) shall take into account the Council's opinion in reaching a final decision on the finding.

(B) The person to whom the Council addresses its opinion (the agency official or the head of the agency) shall prepare a summary of the decision that contains the rationale for the decision and evidence of consideration of the Council's opinion, and provide it to the Council, the SHPO/THPO, and the consulting parties. The head of the agency may delegate his or her duties under this paragraph to the agency's senior policy official. If the agency official's initial finding will be revised, the agency official shall proceed in accordance with the revised finding. If the final decision of the agency is to affirm the initial finding of no adverse effect, once the summary of the decision has been sent to the Council, the SHPO/THPO, and the consulting parties, the agency official's responsibilities under section 106 are fulfilled.

(C) The Council shall retain a record of agency responses to Council opinions on their findings of no adverse effects. The Council shall make this information available to the public.

(d) *Results of assessment*.

(1) *No adverse effect*. The agency official shall maintain a record of the finding and provide information on the finding to the public on request, consistent with the confidentiality provisions of § 800.11(c). Implementation of the undertaking in accordance with the finding as documented fulfills the agency official's responsibilities under section 106 and this part. If the agency official will not conduct the undertaking as proposed in the finding, the agency official shall reopen consultation under paragraph (a) of this section.

(2) *Adverse effect*. If an adverse effect is found, the agency official shall consult further to resolve the adverse effect pursuant to § 800.6.

§ 800.6 Resolution of adverse effects.

(a) *Continue consultation*. The agency official shall consult with the SHPO/THPO and other consulting parties, including Indian tribes and Native Hawaiian organizations, to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic properties.

(1) *Notify the Council and determine Council participation*. The agency official shall notify the Council of the adverse effect finding by providing the documentation specified in § 800.11(e).

(i) The notice shall invite the Council to participate in the consultation when:

(A) The agency official wants the Council to participate;

(B) The undertaking has an adverse effect upon a National Historic Landmark; or

(C) A programmatic agreement under § 800.14(b) will be prepared;

(ii) The SHPO/THPO, an Indian tribe or Native Hawaiian organization, or any other consulting party may at any time independently request the Council to participate in the consultation.

(iii) The Council shall advise the agency official and all consulting parties whether it will participate within 15 days of receipt of notice or other request. Prior to entering the process, the Council shall provide written notice to the agency official and the consulting parties that its decision to participate meets the criteria set forth in appendix A to this part. The Council shall also advise the head of the agency of its decision to enter the process. Consultation with Council participation is conducted in accordance with paragraph (b)(2) of this section.

(iv) If the Council does not join the consultation, the agency official shall proceed with consultation in accordance with paragraph (b)(1) of this section.

(2) *Involve consulting parties*. In addition to the consulting parties identified under § 800.3(f), the agency official, the SHPO/THPO and the Council, if participating, may agree to invite other individuals or organizations to become consulting parties. The agency official shall invite any individual or organization that will assume a specific role or responsibility in a memorandum of agreement to participate as a consulting party.

(3) *Provide documentation*. The agency official shall provide to all consulting parties the documentation specified in § 800.11(e), subject to the confidentiality provisions of § 800.11(c), and such other documentation as may be developed during the consultation to resolve adverse effects.

(4) *Involve the public*. The agency official shall make information available to the public, including the documentation specified in § 800.11(e), subject to the confidentiality provisions of § 800.11(c). The agency official shall provide an opportunity for members of the public to express their views on resolving adverse effects of the undertaking. The agency official should use appropriate mechanisms, taking into account the magnitude of the undertaking and the nature of its effects upon historic properties, the likely effects on historic properties, and the relationship of the Federal involvement to the undertaking to ensure that the public's views are considered in the consultation. The agency official should also consider the extent of notice and information concerning historic preservation issues afforded the public at earlier steps in the section 106 process to determine the appropriate level of public involvement when resolving adverse effects so that the standards of § 800.2(d) are met.

(5) *Restrictions on disclosure of information*. Section 304 of the act and other authorities may limit the disclosure of information under paragraphs (a)(3) and (a)(4) of this section. If an Indian tribe or Native Hawaiian organization objects to the disclosure of information or if the agency official believes that there are other reasons to withhold information, the agency official shall comply with § 800.11(c) regarding the disclosure of such information.

(b) *Resolve adverse effects*.

(1) *Resolution without the Council*.

(i) The agency official shall consult with the SHPO/THPO and other consulting parties to seek ways to avoid, minimize or mitigate the adverse effects.

(ii) The agency official may use standard treatments established by the Council under § 800.14(d) as a basis for a memorandum of agreement.

(iii) If the Council decides to join the consultation, the agency official shall follow paragraph (b)(2) of this section.

(iv) If the agency official and the SHPO/THPO agree on how the adverse effects will be resolved, they shall execute a memorandum of agreement. The agency official must submit a copy of the executed memorandum of agreement, along with the documentation specified in § 800.11(f), to the Council prior to approving the undertaking in order to meet the requirements of section 106 and this subpart.

(v) If the agency official, and the SHPO/THPO fail to agree on the terms of a memorandum of agreement, the agency official shall request the Council to join the consultation and provide the Council with the documentation set forth in § 800.11(g). If the Council decides to join the consultation, the agency official shall proceed in accordance with paragraph (b)(2) of this section. If the Council decides not to join the consultation, the Council will notify the agency and proceed to comment in accordance with § 800.7(c).

(2) *Resolution with Council participation*. If the Council decides to participate in the consultation, the agency official shall consult with the SHPO/THPO, the Council, and other consulting parties, including Indian tribes and Native Hawaiian organizations under § 800.2(c)(3), to seek ways to avoid, minimize or mitigate the adverse effects. If the agency official, the SHPO/THPO, and the Council agree on how the adverse effects will be resolved, they shall execute a memorandum of agreement.

(c) *Memorandum of agreement*. A memorandum of agreement executed and implemented pursuant to this section evidences the agency official's compliance with section 106 and this part and shall govern the undertaking and all of its parts. The agency official shall ensure that the undertaking is carried out in accordance with the memorandum of agreement.

(1) *Signatories*. The signatories have sole authority to execute, amend or terminate the agreement in accordance with this subpart.

(i) The agency official and the SHPO/THPO are the signatories to a memorandum of agreement executed pursuant to paragraph (b)(1) of this section.

(ii) The agency official, the SHPO/THPO, and the Council are the signatories to a memorandum of agreement executed pursuant to paragraph (b)(2) of this section.

(iii) The agency official and the Council are signatories to a

memorandum of agreement executed pursuant to § 800.7(a)(2).

(2) *Invited signatories*.

(i) The agency official may invite additional parties to be signatories to a memorandum of agreement. Any such party that signs the memorandum of agreement shall have the same rights with regard to seeking amendment or termination of the memorandum of agreement as other signatories.

(ii) The agency official may invite an Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties located off tribal lands to be a signatory to a memorandum of agreement concerning such properties.

(iii) The agency official should invite any party that assumes a responsibility under a memorandum of agreement to be a signatory.

(iv) The refusal of any party invited to become a signatory to a memorandum of agreement pursuant to paragraph (c)(2) of this section does not invalidate the memorandum of agreement.

(3) *Concurrence by others*. The agency official may invite all consulting parties to concur in the memorandum of agreement. The signatories may agree to invite others to concur. The refusal of any party invited to concur in the memorandum of agreement does not invalidate the memorandum of agreement.

(4) *Reports on implementation*. Where the signatories agree it is appropriate, a memorandum of agreement shall include a provision for monitoring and reporting on its implementation.

(5) *Duration*. A memorandum of agreement shall include provisions for termination and for reconsideration of terms if the undertaking has not been implemented within a specified time.

(6) *Discoveries*. Where the signatories agree it is appropriate, a memorandum of agreement shall include provisions to deal with the subsequent discovery or identification of additional historic properties affected by the undertaking.

(7) *Amendments*. The signatories to a memorandum of agreement may amend it. If the Council was not a signatory to the original agreement and the signatories execute an amended agreement, the agency official shall file it with the Council.

(8) *Termination*. If any signatory determines that the terms of a memorandum of agreement cannot be or are not being carried out, the signatories shall consult to seek amendment of the agreement. If the agreement is not amended, any signatory may terminate it. The agency official shall either execute a memorandum of agreement with signatories under paragraph (c)(1) of this section or request the comments of the Council under § 800.7(a).

(9) *Copies*. The agency official shall provide each consulting party with a copy of any memorandum of agreement executed pursuant to this subpart.

§ 800.7 Failure to resolve adverse effects.

(a) *Termination of consultation*. After consulting to resolve adverse effects pursuant to § 800.6(b)(2), the agency official, the SHPO/THPO, or the Council may determine that further consultation will not be productive and terminate consultation. Any party that terminates consultation shall notify the other consulting parties and provide them the reasons for terminating in writing.

(1) If the agency official terminates consultation, the head of the agency or an Assistant Secretary or other officer with major department-wide or agency-wide responsibilities shall request that the Council comment pursuant to paragraph (c) of this section and shall notify all consulting parties of the request.

(2) If the SHPO terminates consultation, the agency official and the Council may execute a memorandum of agreement without the SHPO's involvement.

(3) If a THPO terminates consultation regarding an undertaking occurring on or affecting historic properties on its tribal lands, the Council shall comment pursuant to paragraph (c) of this section.

(4) If the Council terminates consultation, the Council shall notify the agency official, the agency's Federal preservation officer and all consulting parties of the termination and comment under paragraph (c) of this section. The Council may consult with the agency's Federal preservation officer prior to terminating consultation to seek to resolve issues concerning the undertaking and its effects on historic properties.

(b) *Comments without termination*. The Council may determine that it is appropriate to provide additional advisory comments upon an undertaking for which a memorandum of agreement will be executed. The Council shall provide them to the agency official when it executes the memorandum of agreement.

(c) *Comments by the Council*.

(1) *Preparation*. The Council shall provide an opportunity for the agency official, all consulting parties, and the public to provide their views within the time frame for developing its comments. Upon request of the Council, the agency official shall provide additional existing information concerning the undertaking and assist the Council in arranging an onsite inspection and an opportunity for public participation.

(2) *Timing*. The Council shall transmit its comments within 45 days of receipt of a request under paragraph (a)(1) or (a)(3) of this section or § 800.8(c)(3), or termination by the Council under § 800.6(b)(1)(v) or paragraph (a)(4) of this section, unless otherwise agreed to by the agency official.

(3) *Transmittal*. The Council shall provide its comments to the head of the agency requesting comment with copies to the agency official, the agency's Federal preservation officer, all consulting parties, and others as appropriate.

(4) *Response to Council comment*. The head of the agency shall take into account the Council's comments in reaching a final decision on the undertaking. Section 110(l) of the act directs that the head of the agency shall document this decision and may not delegate his or her responsibilities pursuant to section 106. Documenting the agency head's decision shall include:

(i) Preparing a summary of the decision that contains the rationale for the decision and evidence of consideration of the Council's comments and providing it to the Council prior to approval of the undertaking;

(ii) Providing a copy of the summary to all consulting parties; and

(iii) Notifying the public and making the record available for public inspection.

§ 800.8 Coordination With the National Environmental Policy Act.

(a) *General principles*.

(1) *Early coordination*. Federal agencies are encouraged to coordinate compliance with section 106 and the procedures in this part with any steps taken to meet the requirements of the National Environmental Policy Act (NEPA). Agencies should consider their section 106 responsibilities as early as possible in the NEPA process, and plan

their public participation, analysis, and review in such a way that they can meet the purposes and requirements of both statutes in a timely and efficient manner. The determination of whether an undertaking is a "major Federal action significantly affecting the quality of the human environment," and therefore requires preparation of an environmental impact statement (EIS) under NEPA, should include consideration of the undertaking's likely effects on historic properties. A finding of adverse effect on a historic property does not necessarily require an EIS under NEPA.

(2) *Consulting party roles*. SHPO/THPOs, Indian tribes and Native Hawaiian organizations, other consulting parties, and organizations and individuals who may be concerned with the possible effects of an agency action on historic properties should be prepared to consult with agencies early in the NEPA process, when the purpose of and need for the proposed action as well as the widest possible range of alternatives are under consideration.

(3) *Inclusion of historic preservation issues*. Agency officials should ensure that preparation of an environmental assessment (EA) and finding of no significant impact (FONSI) or an EIS and record of decision (ROD) includes appropriate scoping, identification of historic properties, assessment of effects upon them, and consultation leading to resolution of any adverse effects.

(b) A*ctions categorically excluded under NEPA*. If a project, activity or program is categorically excluded from NEPA review under an agency's NEPA procedures, the agency official shall determine if it still qualifies as an undertaking requiring review under section 106 pursuant to § 800.3(a). If so, the agency official shall proceed with section 106 review in accordance with the procedures in this subpart.

(c) *Use of the NEPA process for section 106 purposes*. An agency official may use the process and documentation required for the preparation of an EA/FONSI or an EIS/ROD to comply with section 106 in lieu of the procedures set forth in §§ 800.3 through 800.6 if the agency official has notified in advance the SHPO/THPO and the Council that it intends to do so and the following standards are met.

(1) *Standards for developing environmental documents to comply with Section 106*. During preparation of the EA or draft EIS (DEIS) the agency official shall:

(i) Identify consulting parties either pursuant to § 800.3(f) or through the NEPA scoping process with results consistent with § 800.3(f);

(ii) Identify historic properties and assess the effects of the undertaking on such properties in a manner consistent with the standards and criteria of §§ 800.4 through 800.5, provided that the scope and timing of these steps may be phased to reflect the agency official's consideration of project alternatives in the NEPA process and the effort is commensurate with the assessment of other environmental factors;

(iii) Consult regarding the effects of the undertaking on historic properties with the SHPO/THPO, Indian tribes and Native Hawaiian organizations that might attach religious and cultural significance to affected historic properties, other consulting parties, and the Council, where appropriate, during NEPA scoping, environmental analysis, and the preparation of NEPA documents;

(iv) Involve the public in accordance with the agency's published NEPA procedures; and

(v) Develop in consultation with identified consulting parties alternatives and proposed measures that might avoid, minimize or mitigate any adverse effects of the undertaking on historic properties and describe them in the EA or DEIS.

(2) *Review of environmental documents*.

(i) The agency official shall submit the EA, DEIS or EIS to the SHPO/THPO, Indian tribes and Native Hawaiian organizations that might attach religious and cultural significance to affected historic properties, and other consulting parties prior to or when making the document available for public comment. If the document being prepared is a DEIS or EIS, the agency official shall also submit it to the Council.

(ii) Prior to or within the time allowed for public comment on the document, a SHPO/THPO, an Indian tribe or Native Hawaiian organization, another consulting party or the Council may object to the agency official that preparation of the EA, DEIS or EIS has not met the standards set forth in paragraph (c)(1) of this section or that the substantive resolution of the effects on historic properties proposed in an EA, DEIS or EIS is inadequate. If the agency official receives such an objection, the agency official shall refer the matter to the Council.

(3) *Resolution of objections*. Within 30 days of the agency official's referral of an objection under paragraph (c)(2)(ii) of this section, the Council shall review the objection and notify the agency as to its opinion on the objection.

(i) If the Council agrees with the objection:

(A) The Council shall provide the agency official and, if the Council determines the issue warrants it, the head of the agency with the Council's opinion regarding the objection. A Council decision to provide its opinion to the head of an agency shall be guided by the criteria in appendix A to this part. The person to whom the Council addresses its opinion (the agency official or the head of the agency) shall take into account the Council's opinion in reaching a final decision on the issue of the objection.

(B) The person to whom the Council addresses its opinion (the agency official or the head of the agency) shall prepare a summary of the decision that contains the rationale for the decision and evidence of consideration of the Council's opinion, and provide it to the Council. The head of the agency may delegate his or her duties under this paragraph to the agency's senior Policy Official. If the agency official's initial decision regarding the matter that is the subject of the objection will be revised, the agency official shall proceed in accordance with the revised decision. If the final decision of the agency is to affirm the initial agency decision, once the summary of the final decision has been sent to the Council, the agency official shall continue its compliance with this section.

(ii) If the Council disagrees with the objection, the Council shall so notify the agency official, in which case the agency official shall continue its compliance with this section.

(iii) If the Council fails to respond to the objection within the 30 day period, the agency official shall continue its compliance with this section.

(4) *Approval of the undertaking*. If the agency official has found, during the preparation of an EA or EIS that the effects of an undertaking on historic properties are adverse, the agency official shall develop measures in the EA, DEIS, or EIS to avoid, minimize, or mitigate such effects in accordance with paragraph (c)(1)(v) of this section. The agency official's responsibilities under section 106 and the procedures in this

subpart shall then be satisfied when either:

(i) a binding commitment to such proposed measures is incorporated in

(A) the ROD, if such measures were proposed in a DEIS or EIS; or

(B) an MOA drafted in compliance with § 800.6(c); or

(ii) the Council has commented under § 800.7 and received the agency's response to such comments.

(5) *Modification of the undertaking*. If the undertaking is modified after approval of the FONSI or the ROD in a manner that changes the undertaking or alters its effects on historic properties, or if the agency official fails to ensure that the measures to avoid, minimize or mitigate adverse effects (as specified in either the FONSI or the ROD, or in the binding commitment adopted pursuant to paragraph (c)(4) of this section) are carried out, the agency official shall notify the Council and all consulting parties that supplemental environmental documents will be prepared in compliance with NEPA or that the procedures in §§ 800.3 through 800.6 will be followed as necessary.

§ 800.9 Council review of section 106 compliance.

(a) *Assessment of agency official compliance for individual undertakings*. The Council may provide to the agency official its advisory opinion regarding the substance of any finding, determination or decision or regarding the adequacy of the agency official's compliance with the procedures under this part. The Council may provide such advice at any time at the request of any individual, agency or organization or on its own initiative. The agency official shall consider the views of the Council in reaching a decision on the matter in question.

(b) *Agency foreclosure of the Council's opportunity to comment*. Where an agency official has failed to complete the requirements of section 106 in accordance with the procedures in this part prior to the approval of an undertaking, the Council's opportunity to comment may be foreclosed. The Council may review a case to determine whether a foreclosure has occurred. The Council shall notify the agency official and the agency's Federal preservation officer and allow 30 days for the agency official to provide information as to whether foreclosure has occurred. If the Council determines foreclosure has occurred, the Council shall transmit the determination to the agency official and the head of the agency. The Council shall also make the determination available to the public and any parties known to be interested in the undertaking and its effects upon historic properties.

(c) *Intentional adverse effects by applicants*.

(1) *Agency responsibility*. Section 110(k) of the act prohibits a Federal agency from granting a loan, loan guarantee, permit, license or other assistance to an applicant who, with intent to avoid the requirements of section 106, has intentionally significantly adversely affected a historic property to which the grant would relate, or having legal power to prevent it, has allowed such significant adverse effect to occur, unless the agency, after consultation with the Council, determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. Guidance issued by the Secretary pursuant to section 110 of the act governs its implementation.

(2) *Consultation with the Council*. When an agency official determines, based on the actions of an applicant, that section 110(k) is applicable and that circumstances may justify granting the assistance, the agency official shall notify the Council and provide documentation specifying the circumstances under which the adverse effects to the historic property occurred and the degree of damage to the integrity of the property. This documentation shall include any views obtained from the applicant, SHPO/THPO, an Indian tribe if the undertaking occurs on or affects historic properties on tribal lands, and other parties known to be interested in the undertaking.

(i) Within thirty days of receiving the agency official's notification, unless otherwise agreed to by the agency official, the Council shall provide the agency official with its opinion as to whether circumstances justify granting assistance to the applicant and any possible mitigation of the adverse effects.

(ii) The agency official shall consider the Council's opinion in making a decision on whether to grant assistance to the applicant, and shall notify the Council, the SHPO/THPO, and other parties known to be interested in the undertaking prior to granting the assistance.

(3) *Compliance with Section 106*. If an agency official, after consulting with the Council, determines to grant the assistance, the agency official shall comply with §§ 800.3 through 800.6 to take into account the effects of the undertaking on any historic properties.

(d) *Evaluation of Section 106 operations*. The Council may evaluate the operation of the section 106 process by periodic reviews of how participants have fulfilled their legal responsibilities and how effectively the outcomes reached advance the purposes of the act.

(1) *Information from participants*. Section 203 of the act authorizes the Council to obtain information from Federal agencies necessary to conduct evaluation of the section 106 process. The agency official shall make documentation of agency policies, operating procedures and actions taken to comply with section 106 available to the Council upon request. The Council may request available information and documentation from other participants in the section 106 process.

(2) *Improving the operation of section 106*. Based upon any evaluation of the section 106 process, the Council may make recommendations to participants, the heads of Federal agencies, and the Secretary of actions to improve the efficiency and effectiveness of the process. Where the Council determines that an agency official or a SHPO/THPO has failed to properly carry out the responsibilities assigned under the process in this part, the Council may participate in individual case reviews conducted under such process in addition to the SHPO/THPO for such period that it determines is necessary to improve performance or correct deficiencies. If the Council finds a pattern of failure by a Federal agency in carrying out its responsibilities under section 106, the Council may review the policies and programs of the agency related to historic preservation pursuant to section 202(a)(6) of the act and recommend methods to improve the effectiveness, coordination, and consistency of those policies and programs with section 106.

§ 800.10 Special requirements for protecting National Historic Landmarks.

(a) *Statutory requirement*. Section 110(f) of the act requires that the agency official, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking. When

commenting on such undertakings, the Council shall use the process set forth in §§ 800.6 through 800.7 and give special consideration to protecting National Historic Landmarks as specified in this section.

(b) *Resolution of adverse effects*. The agency official shall request the Council to participate in any consultation to resolve adverse effects on National Historic Landmarks conducted under § 800.6.

(c) *Involvement of the Secretary*. The agency official shall notify the Secretary of any consultation involving a National Historic Landmark and invite the Secretary to participate in the consultation where there may be an adverse effect. The Council may request a report from the Secretary under section 213 of the act to assist in the consultation.

(d) *Report of outcome*. When the Council participates in consultation under this section, it shall report the outcome of the section 106 process, providing its written comments or any memoranda of agreement to which it is a signatory, to the Secretary and the head of the agency responsible for the undertaking.

§ 800.11 Documentation standards.

(a) *Adequacy of documentation*. The agency official shall ensure that a determination, finding, or agreement under the procedures in this subpart is supported by sufficient documentation to enable any reviewing parties to understand its basis. The agency official shall provide such documentation to the extent permitted by law and within available funds. When an agency official is conducting phased identification or evaluation under this subpart, the documentation standards regarding description of historic properties may be applied flexibly. If the Council, or the SHPO/THPO when the Council is not involved, determines the applicable documentation standards are not met, the Council or the SHPO/THPO, as appropriate, shall notify the agency official and specify the information needed to meet the standard. At the request of the agency official or any of the consulting parties, the Council shall review any disputes over whether documentation standards are met and provide its views to the agency official and the consulting parties.

(b) *Format*. The agency official may use documentation prepared to comply with other laws to fulfill the requirements of the procedures in this subpart, if that documentation meets the standards of this section.

(c) *Confidentiality*.

(1) *Authority to withhold information*. Section 304 of the act provides that the head of a Federal agency or other public official receiving grant assistance pursuant to the act, after consultation with the Secretary, shall withhold from public disclosure information about the location, character, or ownership of a historic property when disclosure may cause a significant invasion of privacy; risk harm to the historic property; or impede the use of a traditional religious site by practitioners. When the head of a Federal agency or other public official has determined that information should be withheld from the public pursuant to these criteria, the Secretary, in consultation with such Federal agency head or official, shall determine who may have access to the information for the purposes of carrying out the act.

(2) *Consultation with the Council*. When the information in question has been developed in the course of an agency's compliance with this part, the Secretary shall consult with the Council in reaching determinations on the withholding and release of information. The Federal agency shall provide the Council with available information, including views of the SHPO/THPO, Indian tribes and Native Hawaiian organizations, related to the confidentiality concern. The Council shall advise the Secretary and the Federal agency within 30 days of receipt of adequate documentation.

(3) *Other authorities affecting confidentiality*. Other Federal laws and program requirements may limit public access to information concerning an undertaking and its effects on historic properties. Where applicable, those authorities shall govern public access to information developed in the section 106 process and may authorize the agency official to protect the privacy of non-governmental applicants.

(d) *Finding of no historic properties affected*. Documentation shall include:

(1) A description of the undertaking, specifying the Federal involvement, and its area of potential effects, including photographs, maps, drawings, as necessary;

(2) A description of the steps taken to identify historic properties, including, as appropriate, efforts to seek information pursuant to § 800.4(b); and

(3) The basis for determining that no historic properties are present or affected.

(e) *Finding of no adverse effect or adverse effect*. Documentation shall include:

(1) A description of the undertaking, specifying the Federal involvement, and its area of potential effects, including photographs, maps, and drawings, as necessary;

(2) A description of the steps taken to identify historic properties;

(3) A description of the affected historic properties, including information on the characteristics that qualify them for the National Register;

(4) A description of the undertaking's effects on historic properties;

(5) An explanation of why the criteria of adverse effect were found applicable or inapplicable, including any conditions or future actions to avoid, minimize or mitigate adverse effects; and

(6) Copies or summaries of any views provided by consulting parties and the public.

(f) *Memorandum of agreement*. When a memorandum of agreement is filed with the Council, the documentation shall include, any substantive revisions or additions to the documentation provided the Council pursuant to § 800.6(a)(1), an evaluation of any measures considered to avoid or minimize the undertaking's adverse effects and a summary of the views of consulting parties and the public.

(g) *Requests for comment without a memorandum of agreement*. Documentation shall include:

(1) A description and evaluation of any alternatives or mitigation measures that the agency official proposes to resolve the undertaking's adverse effects;

(2) A description of any reasonable alternatives or mitigation measures that were considered but not chosen, and the reasons for their rejection;

(3) Copies or summaries of any views submitted to the agency official concerning the adverse effects of the undertaking on historic properties and alternatives to reduce or avoid those effects; and

(4) Any substantive revisions or additions to the documentation provided the Council pursuant to § 800.6(a)(1).

§ 800.12 Emergency situations.

(a) *Agency procedures*. The agency official, in consultation with the appropriate SHPOs/THPOs, affected Indian tribes and Native Hawaiian organizations, and the Council, is encouraged to develop procedures for taking historic properties into account during operations which respond to a disaster or emergency declared by the President, a tribal government, or the Governor of a State or which respond to other immediate threats to life or property. If approved by the Council, the procedures shall govern the agency's historic preservation responsibilities during any disaster or emergency in lieu of §§ 800.3 through 800.6.

(b) *Alternatives to agency procedures*. In the event an agency official proposes an emergency undertaking as an essential and immediate response to a disaster or emergency declared by the President, a tribal government, or the Governor of a State or another immediate threat to life or property, and the agency has not developed procedures pursuant to paragraph (a) of this section, the agency official may comply with section 106 by:

(1) Following a programmatic agreement developed pursuant to § 800.14(b) that contains specific provisions for dealing with historic properties in emergency situations; or

(2) Notifying the Council, the appropriate SHPO/THPO and any Indian tribe or Native Hawaiian organization that may attach religious and cultural significance to historic properties likely to be affected prior to the undertaking and affording them an opportunity to comment within seven days of notification. If the agency official determines that circumstances do not permit seven days for comment, the agency official shall notify the Council, the SHPO/THPO and the Indian tribe or Native Hawaiian organization and invite any comments within the time available.

(c) *Local governments responsible for section 106 compliance*. When a local government official serves as the agency official for section 106 compliance, paragraphs (a) and (b) of this section also apply to an imminent threat to public health or safety as a result of a natural disaster or emergency declared by a local government's chief executive officer or legislative body, provided that if the Council or SHPO/THPO objects to the proposed action within seven days, the agency official shall comply with §§ 800.3 through 800.6.

(d) *Applicability*. This section applies only to undertakings that will be implemented within 30 days after the disaster or emergency has been formally declared by the appropriate authority. An agency may request an extension of the period of applicability from the Council prior to the expiration of the 30 days. Immediate rescue and salvage operations conducted to preserve life or property are exempt from the provisions of section 106 and this part.

§ 800.13 Post-review discoveries.

(a) *Planning for subsequent discoveries*.

(1) *Using a programmatic agreement*. An agency official may develop a programmatic agreement pursuant to § 800.14(b) to govern the actions to be taken when historic properties are discovered during the implementation of an undertaking.

(2) *Using agreement documents*. When the agency official's identification efforts in accordance with § 800.4 indicate that historic properties are likely to be discovered during implementation of an undertaking and no programmatic agreement has been developed pursuant to paragraph (a)(1) of this section, the agency official shall include in any finding of no adverse effect or memorandum of agreement a process to resolve any adverse effects upon such properties. Actions in conformance with the process satisfy the agency official's responsibilities under section 106 and this part.

(b) *Discoveries without prior planning*. If historic properties are discovered or unanticipated effects on historic properties found after the agency official has completed the section 106 process without establishing a process under paragraph (a) of this section, the agency official shall make reasonable efforts to avoid, minimize or mitigate adverse effects to such properties and:

(1) If the agency official has not approved the undertaking or if construction on an approved undertaking has not commenced, consult to resolve adverse effects pursuant to § 800.6; or

(2) If the agency official, the SHPO/THPO and any Indian tribe or Native Hawaiian organization that might attach religious and cultural significance to the affected property agree that such property is of value solely for its scientific, prehistoric, historic or archeological data, the agency official may comply with the Archeological and Historic Preservation Act instead of the procedures in this part and provide the Council, the SHPO/THPO, and the Indian tribe or Native Hawaiian organization with a report on the actions within a reasonable time after they are completed; or

(3) If the agency official has approved the undertaking and construction has commenced, determine actions that the agency official can take to resolve adverse effects, and notify the SHPO/THPO, any Indian tribe or Native Hawaiian organization that might attach religious and cultural significance to the affected property, and the Council within 48 hours of the discovery. The notification shall describe the agency official's assessment of National Register eligibility of the property and proposed actions to resolve the adverse effects. The SHPO/THPO, the Indian tribe or Native Hawaiian organization and the Council shall respond within 48 hours of the notification. The agency official shall take into account their recommendations regarding National Register eligibility and proposed actions, and then carry out appropriate actions. The agency official shall provide the SHPO/THPO, the Indian tribe or Native Hawaiian organization and the Council a report of the actions when they are completed.

(c) *Eligibility of properties*. The agency official, in consultation with the SHPO/THPO, may assume a newly-discovered property to be eligible for the National Register for purposes of section 106. The agency official shall specify the National Register criteria used to assume the property's eligibility so that information can be used in the resolution of adverse effects.

(d) *Discoveries on tribal lands*. If historic properties are discovered on tribal lands, or there are unanticipated effects on historic properties found on tribal lands, after the agency official has completed the section 106 process without establishing a process under paragraph (a) of this section and construction has commenced, the agency official shall comply with applicable tribal regulations and procedures and obtain the concurrence of the Indian tribe on the proposed action.

Subpart C-Program Alternatives

§ 800.14 Federal agency program alternatives.

(a) *Alternate procedures*. An agency official may develop procedures to implement section 106 and substitute them for all or part of subpart B of this part if they are consistent with the Council's regulations pursuant to section 110(a)(2)(E) of the act.

(1) *Development of procedures*. The agency official shall consult with the Council, the National Conference of State Historic Preservation Officers or individual SHPO/THPOs, as appropriate, and Indian tribes and Native Hawaiian organizations, as specified in paragraph (f) of this section, in the development of alternate procedures, publish notice of the availability of proposed alternate procedures in the Federal Register and take other appropriate steps to seek public input during the development of alternate procedures.

(2) *Council review*. The agency official shall submit the proposed alternate procedures to the Council for a 60-day review period. If the Council finds the procedures to be consistent with this part, it shall notify the agency official and the agency official may adopt them as final alternate procedures.

(3) *Notice*. The agency official shall notify the parties with which it has consulted and publish notice of final alternate procedures in the Federal Register.

(4) *Legal effect*. Alternate procedures adopted pursuant to this subpart substitute for the Council's regulations for the purposes of the agency's compliance with section 106, except that where an Indian tribe has entered into an agreement with the Council to substitute tribal historic preservation regulations for the Council's regulations under section 101(d)(5) of the act, the agency shall follow those regulations in lieu of the agency's procedures regarding undertakings on tribal lands. Prior to the Council entering into such agreements, the Council will provide Federal agencies notice and opportunity to comment on the proposed substitute tribal regulations.

(b) *Programmatic agreements*. The Council and the agency official may negotiate a programmatic agreement to govern the implementation of a particular program or the resolution of adverse effects from certain complex project situations or multiple undertakings.

(1) *Use of programmatic agreements*. A programmatic agreement may be used:

(i) When effects on historic properties are similar and repetitive or are multi-State or regional in scope;

(ii) When effects on historic properties cannot be fully determined prior to approval of an undertaking;

(iii) When nonfederal parties are delegated major decisionmaking responsibilities;

(iv) Where routine management activities are undertaken at Federal installations, facilities, or other land-management units; or

(v) Where other circumstances warrant a departure from the normal section 106 process.

(2) *Developing programmatic agreements for agency programs*.

(i) The consultation shall involve, as appropriate, SHPO/THPOs, the National Conference of State Historic Preservation Officers (NCSHPO), Indian tribes and Native Hawaiian organizations, other Federal agencies, and members of the public. If the programmatic agreement has the potential to affect historic properties on tribal lands or historic properties of religious and cultural significance to an Indian tribe or Native Hawaiian organization, the agency official shall also follow paragraph (f) of this section.

(ii) *Public Participation*. The agency official shall arrange for public participation appropriate to the subject matter and the scope of the program and in accordance with subpart A of this part. The agency official shall consider the nature of the program and its likely effects on historic properties and take steps to involve the individuals, organizations and entities likely to be interested.

(iii) *Effect*. The programmatic agreement shall take effect when executed by the Council, the agency official and the appropriate SHPOs/THPOs when the programmatic agreement concerns a specific region or the president of NCSHPO when NCSHPO has participated in the consultation. A programmatic agreement shall take effect on tribal lands only when the THPO, Indian tribe or a designated representative of the tribe is a signatory to the agreement. Compliance with the procedures established by an approved programmatic agreement satisfies the agency's section 106 responsibilities for all individual undertakings of the program covered by the agreement until it expires or is terminated by the agency, the president of NCSHPO when a signatory, or the Council. Termination by an individual SHPO/THPO shall only terminate the application of a regional programmatic agreement within the jurisdiction of the SHPO/THPO. If a THPO assumes the responsibilities of a SHPO pursuant to section 101(d)(2) of the act and the SHPO is signatory to programmatic agreement, the THPO assumes the role of a signatory, including the right to terminate a regional programmatic agreement on lands under the jurisdiction of the tribe.

(iv) *Notice*. The agency official shall notify the parties with which it has consulted that a programmatic agreement has been executed under paragraph (b) of this section, provide appropriate public notice before it takes effect, and make any internal agency procedures implementing the agreement readily available to the Council, SHPO/THPOs, and the public.

(v) If the Council determines that the terms of a programmatic agreement are not being carried out, or if such an agreement is terminated, the agency official shall comply with subpart B of this part with regard to individual undertakings of the program covered by the agreement.

(3) *Developing programmatic agreements for complex or multiple undertakings*. Consultation to develop a programmatic agreement for dealing with the potential adverse effects of complex projects or multiple undertakings shall follow § 800.6. If consultation pertains to an activity involving multiple undertakings and the parties fail to reach agreement, then the agency official shall comply with the provisions of subpart B of this part for each individual undertaking.

(4) *Prototype programmatic agreements*. The Council may designate an agreement document as a prototype programmatic agreement that may be used for the same type of program or undertaking in more than one case or area. When an agency official uses such a prototype programmatic agreement, the agency official may develop and execute the agreement with the appropriate SHPO/THPO and the agreement shall become final without need for Council participation in consultation or Council signature.

(c) *Exempted categories*.

(1) *Criteria for establishing*. The Council or an agency official may propose a program or category of undertakings that may be exempted

from review under the provisions of subpart B of this part, if the program or category meets the following criteria:

(i) The actions within the program or category would otherwise qualify as "undertakings" as defined in § 800.16;

(ii) The potential effects of the undertakings within the program or category upon historic properties are foreseeable and likely to be minimal or not adverse; and

(iii) Exemption of the program or category is consistent with the purposes of the act.

(2) *Public participation*. The proponent of the exemption shall arrange for public participation appropriate to the subject matter and the scope of the exemption and in accordance with the standards in subpart A of this part. The proponent of the exemption shall consider the nature of the exemption and its likely effects on historic properties and take steps to involve individuals, organizations and entities likely to be interested.

(3) *Consultation with SHPOs/THPOs*. The proponent of the exemption shall notify and consider the views of the SHPOs/THPOs on the exemption.

(4) *Consultation with Indian tribes and Native Hawaiian organizations*. If the exempted program or category of undertakings has the potential to affect historic properties on tribal lands or historic properties of religious and cultural significance to an Indian tribe or Native Hawaiian organization, the Council shall follow the requirements for the agency official set forth in paragraph (f) of this section.

(5) *Council review of proposed exemptions*. The Council shall review an exemption proposal that is supported by documentation describing the program or category for which the exemption is sought, demonstrating that the criteria of paragraph (c)(1) of this section have been met, describing the methods used to seek the views of the public, and summarizing any views submitted by the SHPO/THPOs, the public, and any others consulted. Unless it requests further information, the Council shall approve or reject the proposed exemption within 30 days of receipt, and thereafter notify the relevant agency official and SHPO/THPOs of the decision. The decision shall be based on the consistency of the exemption with the purposes of the act, taking into consideration the magnitude of the exempted undertaking or program and the likelihood of impairment of historic properties in accordance with section 214 of the act.

(6) *Legal consequences*. Any undertaking that falls within an approved exempted program or category shall require no further review pursuant to subpart B of this part, unless the agency official or the Council determines that there are circumstances under which the normally excluded undertaking should be reviewed under subpart B of this part.

(7) *Termination*. The Council may terminate an exemption at the request of the agency official or when the Council determines that the exemption no longer meets the criteria of paragraph (c)(1) of this section. The Council shall notify the agency official 30 days before termination becomes effective.

(8) *Notice*. The proponent of the exemption shall publish notice of any approved exemption in the Federal Register.

(d) *Standard treatments*.

(1) *Establishment*. The Council, on its own initiative or at the request of another party, may establish standard methods for the treatment of a category of historic properties, a category of undertakings, or a category of effects on historic properties to assist Federal agencies in satisfying the requirements of subpart B of this part. The Council shall publish notice of standard treatments in the Federal Register.

(2) *Public participation*. The Council shall arrange for public participation appropriate to the subject matter and the scope of the standard treatment and consistent with subpart A of this part. The Council shall consider the nature of the standard treatment and its likely effects on historic properties and the individuals, organizations and entities likely to be interested. Where an agency official has proposed a standard treatment, the Council may request the agency official to arrange for public involvement.

(3) *Consultation with SHPOs/THPOs*. The Council shall notify and consider the views of SHPOs/THPOs on the proposed standard treatment.

(4) *Consultation with Indian tribes and Native Hawaiian organizations*. If the proposed standard treatment has the potential to affect historic properties on tribal lands or historic properties of religious and cultural significance to an Indian tribe or Native Hawaiian organization, the Council shall follow the requirements for the agency official set forth in paragraph (f) of this section.

(5) *Termination*. The Council may terminate a standard treatment by publication of a notice in the Federal Register 30 days before the termination takes effect.

(e) *Program comments*. An agency official may request the Council to comment on a category of undertakings in lieu of conducting individual reviews under §§ 800.4 through 800.6. The Council may provide program comments at its own initiative.

(1) *Agency request*. The agency official shall identify the category of undertakings, specify the likely effects on historic properties, specify the steps the agency official will take to ensure that the effects are taken into account, identify the time period for which the comment is requested and summarize any views submitted by the public.

(2) *Public participation*. The agency official shall arrange for public participation appropriate to the subject matter and the scope of the category and in accordance with the standards in subpart A of this part. The agency official shall consider the nature of the undertakings and their likely effects on historic properties and the individuals, organizations and entities likely to be interested.

(3) *Consultation with SHPOs/THPOs*. The Council shall notify and consider the views of SHPOs/THPOs on the proposed program comment.

(4) *Consultation with Indian tribes and Native Hawaiian organizations*. If the program comment has the potential to affect historic properties on tribal lands or historic properties of religious and cultural significance to an Indian tribe or Native Hawaiian organization, the Council shall follow the requirements for the agency official set forth in paragraph (f) of this section.

(5) *Council action*. Unless the Council requests additional documentation, notifies the agency official that it will decline to comment, or obtains the consent of the agency official to extend the period for providing comment, the Council shall comment to the agency official within 45 days of the request.

(i) If the Council comments, the agency official shall take into account the comments of the Council in carrying out the undertakings within the category and publish notice in the Federal Register of the Council's comments and steps the agency will take to ensure that effects to historic properties are taken into account.

(ii) If the Council declines to comment, the agency official shall continue to comply with the requirements of §§ 800.3 through 800.6 for the individual undertakings.

(6) *Withdrawal of comment*. If the Council determines that the consideration of historic properties is not being carried out in a manner consistent with the program comment, the Council may withdraw the comment and the agency official shall comply with the requirements of §§ 800.3 through 800.6 for the individual undertakings.

(f) *Consultation with Indian tribes and Native Hawaiian organizations when developing program alternatives*. Whenever an agency official proposes a program alternative pursuant to paragraphs (a) through (e) of this section, the agency official shall ensure that development of the program alternative includes appropriate government-to-government consultation with affected Indian tribes and consultation with affected Native Hawaiian organizations.

(1) *Identifying affected Indian tribes and Native Hawaiian organizations*. If any undertaking covered by a proposed program alternative has the potential to affect historic properties on tribal lands, the agency official shall identify and consult with the Indian tribes having jurisdiction over such lands. If a proposed program alternative has the potential to affect historic properties of religious and cultural significance to an Indian tribe or a Native Hawaiian organization which are located off tribal lands, the agency official shall identify those Indian tribes and Native Hawaiian organizations that might attach religious and cultural significance to such properties and consult with them. When a proposed program alternative has nationwide applicability, the agency official shall identify an appropriate government to government consultation with Indian tribes and consult with Native Hawaiian organizations in accordance with existing Executive orders, Presidential memoranda and applicable provisions of law.

(2) *Results of consultation*. The agency official shall provide summaries of the views, along with copies of any written comments, provided by affected Indian tribes and Native Hawaiian organizations to the Council as part of the documentation for the proposed program alternative. The agency official and the Council shall take those views into account in reaching a final decision on the proposed program alternative.

§ 800.15 Tribal, State, and local program alternatives. (Reserved)

§ 800.16 Definitions.

(a) *Act* means the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470w-6.

(b) *Agency* means agency as defined in 5 U.S.C. 551.

(c) *Approval of the expenditure of funds* means any final agency decision authorizing or permitting the expenditure of Federal funds or financial assistance on an undertaking, including any agency decision that may be subject to an administrative appeal.

(d) *Area of potential effects* means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

(e) *Comment* means the findings and recommendations of the Council formally provided in writing to the head of a Federal agency under section 106.

(f) *Consultation* means the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the section 106 process. The Secretary's "Standards and Guidelines for Federal Agency Preservation Programs pursuant to the National Historic Preservation Act" provide further guidance on consultation.

(g) *Council* means the Advisory Council on Historic Preservation or a Council member or employee designated to act for the Council.

(h) *Day* or *days* means calendar days.

(i) *Effect* means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.

(j) *Foreclosure* means an action taken by an agency official that effectively precludes the Council from providing comments which the agency official can meaningfully consider prior to the approval of the undertaking.

(k) *Head of the agency* means the chief official of the Federal agency responsible for all aspects of the agency's actions. If a State, local or tribal government has assumed or has been delegated responsibility for section 106 compliance, the head of that unit of government shall be considered the head of the agency.

(l)(1) *Historic property* means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

(2) The term *eligible for inclusion in the National Register* includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria.

(m) *Indian tribe* means an Indian tribe, band, nation, or other organized group or community, including a native village, regional corporation or village corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

(n) *Local government* means a city, county, parish, township, municipality, borough, or other general purpose political subdivision of a State.

(o) *Memorandum of agreement* means the document that records the terms and conditions agreed upon to resolve the adverse effects of an undertaking upon historic properties.

(p) *National Historic Landmark* means a historic property that the Secretary of the Interior has designated a National Historic Landmark.

(q) *National Register* means the National Register of Historic Places maintained by the Secretary of the Interior.

(r) *National Register criteria* means the criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register (36 CFR part 60).

(s)(1)*Native Hawaiian organization* means any organization which serves and represents the interests of Native Hawaiians; has as a primary and stated purpose the provision of services to Native Hawaiians; and has demonstrated expertise in aspects of

historic preservation that are significant to Native Hawaiians.

(2) *Native Hawaiian* means any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii.

(t) *Programmatic agreement* means a document that records the terms and conditions agreed upon to resolve the potential adverse effects of a Federal agency program, complex undertaking or other situations in accordance with § 800.14(b).

(u) *Secretary* means the Secretary of the Interior acting through the Director of the National Park Service except where otherwise specified.

(v) *State Historic Preservation Officer (SHPO)* means the official appointed or designated pursuant to section 101(b)(1) of the act to administer the State historic preservation program or a representative designated to act for the State historic preservation officer.

(w) *Tribal Historic Preservation Officer (THPO)*means the tribal official appointed by the tribe's chief governing authority or designated by a tribal ordinance or preservation program who has assumed the responsibilities of the SHPO for purposes of section 106 compliance on tribal lands in accordance with section 101(d)(2) of the act.

(x) *Tribal lands* means all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities.

(y) *Undertaking* means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval.

(z) *Senior policy official* means the senior policy level official designated by the head of the agency pursuant to section 3(e) of Executive Order 13287.

Appendix A to Part 800 -- Criteria for Council Involvement in Reviewing Individual section 106 Cases

(a) *Introduction*. This appendix sets forth the criteria that will be used by the Council to determine whether to enter an individual section 106 review that it normally would not be involved in.

(b) *General policy*. The Council may choose to exercise its authorities under the section 106 regulations to participate in an individual project pursuant to the following criteria. However, the Council will not always elect to participate even though one or more of the criteria may be met.

(c) *Specific criteria*. The Council is likely to enter the section 106 process at the steps specified in the regulations in this part when an undertaking:

(1) *Has substantial impacts on important historic properties*. This may include adverse effects on properties that possess a national level of significance or on properties that are of unusual or noteworthy importance or are a rare property type; or adverse effects to large numbers of historic properties, such as impacts to multiple properties within a historic district.

(2) *Presents important questions of policy or interpretation*. This may include questions about how the Council's regulations are being applied or interpreted, including possible foreclosure or anticipatory demolition situations; situations where the outcome will set a precedent affecting Council policies or program goals; or the development of programmatic agreements that alter the way the section 106 process is applied to a group or type of undertakings.

(3) *Has the potential for presenting procedural problems*. This may include cases with substantial public controversy that is related to historic preservation issues; with disputes among or about consulting parties which the Council's involvement could help resolve; that are involved or likely to be involved in litigation on the basis of section 106; or carried out by a Federal agency, in a State or locality, or on tribal lands where the Council has previously identified problems with section 106 compliance pursuant to § 800.9(d)(2).

(4) *Presents issues of concern to Indian tribes or Native Hawaiian organizations*. This may include cases where there have been concerns raised about the identification of, evaluation of or assessment of effects on historic properties to which an Indian tribe or Native Hawaiian organization attaches religious and cultural significance; where an Indian tribe or Native Hawaiian organization has requested Council involvement to assist in the resolution of adverse effects; or where there are questions relating to policy, interpretation or precedent under section 106 or its relation to other authorities, such as the Native American Graves Protection and Repatriation Act.

The Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act

Section 110 of the National Historic Preservation Act
(16 U.S.C. 470)

National Park Service

National Park Service
U.S. Department of the Interior

Federal Agency Assistance Program

THE SECRETARY OF THE INTERIOR'S STANDARDS AND GUIDELINES FOR FEDERAL AGENCY HISTORIC PRESERVATION PROGRAMS PURSUANT TO THE NATIONAL HISTORIC PRESERVATION ACT

Published in Final in the Federal Register, 24 April 1998

Section 110 of the National Historic Preservation Act (16 U.S.C. 470)

Section 110 of the National Historic Preservation Act (hereinafter referred to as NHPA or the Act) sets out the broad historic preservation responsibilities of Federal agencies and is intended to ensure that historic preservation is fully integrated into the ongoing programs of all Federal agencies. This intent was first put forth in the preamble to the National Historic Preservation Act upon its initial adoption in 1966. When the Act was amended in 1980, section 110 was added to expand and make more explicit the statute's statement of Federal agency responsibility for identifying and protecting historic properties and avoiding unnecessary damage to them. Section 110 also charges each Federal agency with the affirmative responsibility for considering projects and programs that further the purposes of the NHPA, and it declares that the costs of preservation activities are eligible project costs in all undertakings conducted or assisted by a Federal agency.

The 1992 amendments to the Act further strengthened the provisions of section 110. Under the law, the head of each Federal agency must do several things. First, he or she must assume responsibility for the preservation of historic properties owned or controlled by the agency. Each Federal agency must establish a preservation program for the identification, evaluation, nomination to the National Register, and protection of historic properties. Each Federal agency must consult with the Secretary of the Interior (acting through the Director of the National Park Service) in establishing its preservation programs. Each Federal agency must, to the maximum extent feasible, use historic properties available to it in carrying out its responsibilities. The 1992 additions to section 110 also set out some specific benchmarks for Federal agency preservation programs, including:

(a) historic properties under the jurisdiction or control of the agency are to be managed and maintained in a way that considers the preservation of their historic, archeological, architectural, and cultural values;

(b) historic properties not under agency jurisdiction or control but potentially affected by agency actions are to be fully considered in agency planning;

(c) agency preservation-related activities are to be carried out in consultation with other Federal, State, and local agencies, Indian tribes, Native Hawaiian organizations, and the private sector;

(d) agency procedures for compliance with section 106 of the Act are to be consistent with regulations issued by the Advisory Council on

Historic Preservation; and

(e) an agency may not grant assistance or a license or permit to an applicant who damages or destroys historic property with the intent of avoiding the requirements of section 106, unless specific circumstances warrant such assistance.

The complete text of section 110 is included as Appendix A to these Guidelines. Also included as Appendix B are sections 1 and 2 of the NHPA that set out the purposes and policies of that Act. Anyone unfamiliar with the purposes of the Act or with the specific provisions of section 110 as amended in 1992 should refer to those texts in addition to the revised Guidelines.

Section 110 Guidelines - Background and Format

The Section 110 Guidelines were first published in the Federal Register on February 17, 1988 (53 FR 4727-46). This second edition has been revised to incorporate the 1992 amendments to the Act and to make the Guidelines easier to use.

These Guidelines neither replace nor incorporate other statutory authorities, regulations, or *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*. These Guidelines show how Federal agencies should address these various other requirements and guidelines in carrying out their responsibilities under the Act. The head of each Federal agency, acting through its Preservation Officer, should become familiar with all the statutes, regulations, and guidelines that bear upon the agency historic preservation program required by section 110.

This second edition of the Section 110 Guidelines follows a format significantly different from that of its predecessor. The first edition followed the sequence of the statute and provided detailed guidance for each subsection of section 110. The current edition instead takes the form of standards and guidelines that will assist each Federal agency in establishing a preservation program that meets the various requirements of section 110.

Agency Use of These Standards and Guidelines for Evaluating Their Programs

The preservation and use of historic properties and their careful consideration in agency planning and decisionmaking are in the public interest, are consistent with the declaration of policy set forth in the NHPA, and must be a fundamental part of the mission of any Federal agency. These standards and guidelines are intended to assist Federal agency personnel and the agency head in carrying out their policies, programs, and projects in a manner consistent with the requirements and purposes of section 110 of the NHPA, related statutory authorities, and existing regulations and guidance.

An agency should use these standards and guidelines, and consultation with the Secretary and others, to ensure that the basic individual components of a preservation program called for in section 110 are in place. The preservation program should also be fully

integrated into both the general and specific operating procedures of the agency. The agency's preservation program should interact with the agency's management systems to ensure that historic preservation issues are considered in decisionmaking. The program should try to ensure that the agency's officials, employees, contractors, and other responsible parties have sufficient budgetary and personnel resources needed to identify, evaluate, nominate, manage, and use the historic properties under agency care or affected by agency actions.

Consultation and Technical Assistance

Section 110(a)(2) requires that agency preservation programs be established "in consultation with the Secretary." Federal agencies seeking such consultation should contact the Associate Director, Cultural Resource Stewardship and Partnerships, National Park Service, Department of the Interior, 1201 Eye St., NW, Washington, D.C. 20005. Consultation with the Secretary regarding an agency's program will be based upon the degree to which that program is consistent with the Act and with the standards and guidelines that follow. Upon request, the Secretary will also provide informal technical assistance to any agency on questions concerning the establishment or improvement of the agency's historic preservation program. Requests for technical assistance should also be addressed to the Associate Director, Cultural Resources Stewardship and Partnerships, National Park Service.

Section 202(a)(6) of the Act provides that the Advisory Council may review Federal agency preservation programs and recommend improvements to such agencies. Where the Council carries out such a review, it will base any recommendations on its own regulations and policy statements, and on the standards and guidelines that follow.

The Secretary of the Interior's Standards for Federal Agency Historic Preservation Programs

Standard 1. Each Federal agency establishes and maintains a historic preservation program that is coordinated by a qualified Preservation Officer, and that is consistent with and seeks to advance the purposes of the National Historic Preservation Act. The head of each Federal agency is responsible for the preservation of historic properties owned or controlled by the agency. [Sec. 110(a)(1), Sec. 110(a)(2), Sec. 110(c), and Sec. 110(d)].

Standard 2. An agency provides for the timely identification and evaluation of historic properties under agency jurisdiction or control and/or subject to effect by agency actions. [Sec. 110(a)(2)(A), and Sec. 112]

Standard 3. An agency nominates historic properties under the agency's jurisdiction or control to the National Register of Historic Places. [Sec. 110(a)(2)(A)].

Standard 4. An agency gives historic properties full consideration when planning or considering approval of any action that might affect

such properties. [Sec.110(a)(2)((B),(C), and (E), Sec. 110(f) and Sec. 402(16 U.S.C. 470a-2)]

Standard 5. An agency consults with knowledgeable and concerned parties outside the agency about its historic preservation related activities. [Sec. 110(a)(2)(D)].

Standard 6. An agency manages and maintains historic properties under its jurisdiction or control in a manner that considers the preservation of their historic, architectural, archeological, and cultural values. [Sec. 110(a)(1), Sec. 110 (a)(2)(B), Sec. 110(b)].

Standard 7. An agency gives priority to the use of historic properties to carry out agency missions. [Sec. 110(a)(1)].

For a cross-reference of each standard to the parts of 110 see Appendix A.

The Secretary's Standards and Guidelines for Federal Agency Historic Preservation Programs

These guidelines have no regulatory effect. Instead, they are the Secretary's formal guidance to each Federal agency on meeting the requirements of section 110 of the Act.

The following guidelines provide information on the steps an agency must take to establish and maintain a preservation program that meets each of the applicable Secretary's Standards.

Standard 1. Each Federal agency establishes and maintains a historic preservation program that is coordinated by a qualified Preservation Officer, and that is consistent with and seeks to advance the purposes of the National Historic Preservation Act. The head of each Federal agency is responsible for the preservation of historic properties owned or controlled by the agency. [Sec. 110(a)(1), Sec. 110(a)(2), Sec. 110(c), and Sec. 110(d)].

Guidelines:

Agency Programs

(a) An agency historic preservation program must include specific provisions to ensure, to the extent feasible given the agency's mission and mandates, the full consideration and appropriate preservation of historic properties under the agency's jurisdiction or control and of other historic properties affected by the agency's actions. [Sec. 110(a)(2)(B)]

(b) An agency historic preservation program is embodied in agency-wide policies, procedures, and activities. An agency historic preservation program is the vehicle for ensuring that the agency's mission-driven activities are carried out in a manner consistent with the purposes of National Historic Preservation Act. The program is not an activity carried out separate and apart from the activities mandated by the agency mission.

(c) The identification, evaluation, and preservation of historic

properties must be the fundamental goal of any Federal agency preservation program. [Sec. 110(a)(2)]. However, an agency's ability to achieve this goal is affected by its own mission and by whether it owns and manages historic property:

> **(1)** In those cases where historic property is under the jurisdiction and control of the agency, the agency has an affirmative responsibility to manage and maintain such property in a manner that takes into account the property's historic significance. In addition, the Federal agency has an affirmative responsibility to seek and use historic properties to the maximum extent feasible in carrying out its activities. [Sec. 110(a)(1) and Sec. 110(a)(2)(B)]
>
> **(2)** Where an agency carries out its mission through the award of grant funds for specific activities, and where those activities will inevitably affect historic properties, the agency should, to the maximum extent feasible, design its programs to encourage grantees to retain and make appropriate use of historic properties in carrying out grant-funded activities.
>
> **(3)** Where an agency's historic preservation activities are limited to considering the impact of federally licensed, or permitted activities initiated by non-federal entities on non-federally owned historic properties, the agency's preservation responsibility may be more narrowly cast as seeking to avoid or minimize any adverse effects to such properties that might otherwise occur as a result of such activities.

(d) An agency historic preservation program must be established in consultation with the Secretary of the Interior. [Sec. 110(a)(2)]. Consultation with the Secretary regarding an agency's historic preservation program will be based on these Standards and Guidelines.

(e) The agency historic preservation program must be an effective and efficient vehicle through which the agency head can meet his or her statutory responsibilities for the preservation of historic properties. [Sec. 110(a)(2)]. Compliance with responsibilities pursuant to section 106 of the Act is an integral part of an agency's overall historic preservation program. That program, however, is not simply intended to meet agency section 106 responsibilities to "take into account" the effects of its undertakings on historic properties. The program described in section 110(a)(2) is an agency-wide approach to achieving the goals set forth in the NHPA. It should be fully integrated into both the general and specific operating procedures of the agency.

(f) The preservation program should interact with the agency's budgetary and financial management systems to:

> **(1)** ensure that historic preservation issues are considered before budgetary decisions are made that

foreclose historic preservation options, and

(2) ensure that the historic preservation program itself is adequately funded to enable it to perform its functions.

(g) To avoid needless duplication of effort and increased workload in developing and implementing its program, the agency should carefully review and consider using those existing policies, procedures, approaches and standards that are government-wide, i.e., applicable to all preservation programs, and develop only those that need to be agency-specific. Preservation programs can be expected to differ based on the extent to which:

(1) agencies manage, own, or exercise control over historic properties;

(2) historic properties play a significant role in agency activities through active use (e.g., for recreation, interpretation, public access/use, transportation, office space);

(3) agencies are engaged in public education/interpretation, or multiple-use resource management; or,

(4) agencies are in a position to influence actions affecting historic properties.

(h) Agency funding decisions for historic preservation work should be based on a determination of the prudent level of investment for a specific undertaking. That determination, in turn, should acknowledge that preservation costs are eligible project costs on an equal footing with other planning, design, construction, environmental protection, and mitigation needs and requirements. Similarly, the cost of caring for, documenting, and otherwise preserving artifacts, records, and remains related to historic properties is an eligible project cost. [Sec. 110(g)]. The agency may contract with a State Historic Preservation Officer (SHPO), another Federal agency, or other public or private organization as appropriate to assist it in carrying out the agency's historic preservation work.

(i) Where preservation activity is a condition of obtaining a Federal license or permit, or Federal approval, or is subject to a delegation of authority by a Federal agency, the recipient may be expected to incur reasonable costs. [Sec. 110(g)]. Because it is difficult to establish fair standards that would be applicable in all cases, "reasonable costs" should not be determined using inflexible criteria, such as a flat fee or a standard percentage of a budget, but rather should be determined on a case-by-case basis.

(j) An efficient preservation program should allow the agency to do more than simply meet its section 110 and 106 responsibilities. In order to eliminate duplicative effort and assist in agency planning, the preservation program should be coordinated with actions the agency takes to meet the requirements of other relevant and related Federal

statutes (e.g., NAGPRA, the Archaeological Resources Protection Act (ARPA), the American Indian Religious Freedom Act (AIRFA), and the National Environmental Policy Act (NEPA)) in a comprehensive, anticipatory manner.

Preservation Officer

(k) The agency position responsible for coordinating the preservation program is the Preservation Officer required of all agencies by section 110(c) of the NHPA (unless specifically exempted under section 214 of the NHPA). A Preservation Officer may have other agency duties in addition to historic preservation coordination, depending on the magnitude and degree of the agency's historic preservation activities and responsibilities. [Sec. 110(c)].

(l) Agency officials designated as Preservation Officers should have substantial experience administering Federal historic preservation activities and/or specifically assigned staff under their supervision who have such experience. Section 112 of the NHPA requires that agency personnel or contractors responsible for historic resources, meet qualification standards established by the Office of Personnel Management in consultation with the Secretary.

(m) Each Preservation Officer should have sufficient agency-wide authority, staff, and other resources to carry out section 110 responsibilities effectively. Agency administrative systems should ensure that the Preservation Officer can review and comment meaningfully on all agency programs and activities and interact with the agency's planning and project management systems in such a way as to influence decisions potentially affecting historic resources. The Preservation Officer should have sufficient authority and the agency should have sufficient control systems to ensure that decisions made pursuant to section 106 and section 110 about the treatment of such resources are in fact carried out.

(n) In agencies where significant preservation responsibilities are delegated to regional or field offices, or Federal facilities or installations, the agency head should also appoint qualified preservation officials at those levels. Such officials should ensure that their actions and conduct of historic preservation activities are coordinated with, and consistent with, those of the central office Preservation Officer for that agency.

(o) The agency should ensure that its personnel management system identifies those personnel with preservation responsibilities, includes such responsibilities in their position descriptions and performance elements and standards, and appropriately rewards high-quality performance. In addition, the agency should provide for ongoing training in historic preservation for all agency personnel with preservation responsibilities.

Standard 2. An agency provides for the timely identification and evaluation of historic properties under agency jurisdiction or control and/or subject to effect by agency actions. [Sec. 110(a)(2)(A) and Sec. 112].

Guidelines:

(a) Identification and evaluation of historic properties are critical steps in their long-term management, as well as in project-specific planning by Federal agencies. Normally, an agency must identify the full range of historic properties that may be affected by an agency program or activity, including, but not limited to, historic buildings and structures, archaeological sites, traditional cultural properties, designed and other cultural landscapes, historic linear features such as roads and trails, historic objects such as signs and street furniture, and historic districts comprising cohesive groups of such properties. [Sec. 110(a)(2)(A)]. Effective management of historic properties requires that they first be identified and evaluated. The level of identification needed can vary depending on the nature of the property or property type, the nature of the agency's management authority, and the nature of the agency's possible effects on the property.

(b) The Secretary of the Interior has issued standards and guidelines for identification and evaluation of historic properties (in *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* [48 FR 44720-44726]), which should be used to ensure that the preservation program's identification and evaluation procedures will be adequate and appropriate. Identification and evaluation of historic properties must be conducted by professionally qualified individuals. [Sec. 101(g), Sec. 101(h), and Sec. 112]

(c) Agency efforts to identify and evaluate historic properties should include early consultation with the State Historic Preservation Officer, or the Tribal Preservation Officer as appropriate, to ensure that such efforts benefit from and build effectively upon any relevant data already included in the State's or Tribe's inventory. For information on consulting with an Indian tribe that has assumed State Historic Preservation Officer functions pursuant to section 101(d)(2) of the Act, see Standard 6, Guideline 7(b). Agencies are encouraged to share with the appropriate SHPO and Tribal Preservation Officer, information about historic properties gathered through their identification and evaluation activities.

(d) Where an agency is planning an action that is not aimed at specific land areas (for example, a nationwide program of assistance to local governments, farmers, or low-income homeowners), and the identification of specific historic properties subject to effect is not feasible, the agency should nevertheless consider what types of historic properties may be affected directly or indirectly, and consider strategies that will minimize adverse effect and maximize beneficial effect on those properties. Such consideration must be carried out in consultation with SHPOs, Tribal Preservation Officers, local governments, Indian tribes, Native Hawaiian organizations, and the interested public as appropriate (110(a)(2)(E)(ii)).

(e) Where an agency is planning an action that could affect historic properties directly or indirectly (e.g., a land-use or construction project; a project that could change the way land or buildings are

used or developed, or alter the social, cultural, or economic character of a community; and any program of assistance to or the issuance of a license for such activities), identification and evaluation should take place at the earliest possible stage of planning, and be coordinated with the earliest phases of any environmental review carried out under the National Environmental Policy Act and/or related authorities. Identification and evaluation efforts must be carried out in consultation with SHPOs, Tribal Preservation Officers, local governments, Indian tribes, Native Hawaiian organizations, and the interested public as appropriate (110(a)(2)(E)(ii).

(f) Where identification and evaluation are carried out as a part of long-term planning, it may be appropriate to conduct background studies to develop a "predictive model" of historic property distributions that can be used in evaluating the likely effects of particular land management projects as the program proceeds. In some cases, depending on management needs for a particular project or activity, it may not be necessary to identify exhaustively every historic property or historic property type. It may also be appropriate and cost-effective to carry out the work in phases organized around particular property types or other such coherent units. For example, if historic architecture is of greater immediate concern than Native American traditional properties or archeological sites, a survey of architecture alone may be appropriate during a particular budget year, with archeological survey and ethnographic studies deferred until later. However, identification is not complete until all historic properties have been identified. Such work should be developed in consultation with SHPOs, Tribal Preservation Officers, local governments, Indian tribes and Native Hawaiian organizations as appropriate, and other parties that may have knowledge of, or interest in, such properties.

(g) Identification of historic properties is an ongoing process. As time passes, events occur, or scholarly and public thinking about historical significance changes. Therefore, even when an area has been completely surveyed for historic properties of all types it may require re-investigation if many years have passed since the survey was completed. Such follow-up studies should be based upon previously obtained information, may focus upon filling information gaps, and should consider re-evaluation of properties based upon new information or changed historical understanding.

Standard 3. An agency nominates historic properties under the agency's jurisdiction or control to the National Register of Historic Places. [Sec. 110(a)(2)(A)].

Guidelines

(a) The first step in designing a program for the nomination of historic properties is to determine what role nomination will play in the agency's overall preservation program. For example:

> **(1)** An agency that controls relatively few historic properties may find it realistic to nominate them all to the National Register, and then manage them

accordingly. An agency with a great many historic properties will need to establish explicit priorities for identifying, nominating, and preserving properties.

(2) Placement on the National Register may help justify budgeting funds for preservation or management of a historic property, so agencies may want to give priority to nominating properties as a first step in upgrading their maintenance and providing for their continued active service in carrying out agency programs. Further, development of National Register-level documentation provides information on the property that will assist the agency in its subsequent property management decisions.

(3) An agency with an excellent internal program for identifying and preserving historic properties may find that other determinants, such as whether a property is to be managed and interpreted as a site of public interest, are more useful in establishing nomination priorities.

(4) An agency that regularly transfers property out of Federal ownership may find it useful to give higher priority to nominating properties to be transferred, at the expense of other properties, in those cases where placement on the National Register may make preservation more likely once a property is no longer under Federal management.

(b) Beyond serving the agency's own internal management needs, the National Register is the nation's formal repository of information on historic properties. To the extent that the National Register is incomplete, its usefulness as a planning and educational tool is diminished. Consequently, an agency should generally strive to nominate the historic properties under its jurisdiction or control to the National Register.

(c) The Secretary of the Interior already has in place Standards and Guidelines for registration of historic properties (in *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44726-44728) that details the process that should be followed in formally recognizing historic properties as significant. These Standards and Guidelines, along with the National Register Bulletin #16, *Guidelines for Completing National Register Forms*, provide guidance on completing National Register nomination forms. National Register regulations (36 CFR 60) set forth the nomination process.

Standard 4. An agency gives historic properties full consideration when planning or considering approval of any action that might affect such properties. [Sec. 110(a)(2)(B),(C), and (E), and Sec. 402 (16 U.S.C. 470a-2)].

Guidelines

All Historic Properties

(a) Each Federal agency has an affirmative responsibility under section 110 of the National Historic Preservation Act to consider its activities' effects on our nation's historic properties. This responsibility extends to a systematic consideration of properties not under the jurisdiction or control of the agency, but potentially affected by agency actions. [Sec. 110(a)(2)(C)].

(b) Full consideration of historic properties includes assessment of the widest range of preservation alternatives early in program or project planning, coordinated to the extent feasible with other kinds of required planning and environmental review.

(c) Full consideration of historic properties includes consideration of all kinds of effects on those properties: direct effects, indirect or secondary effects, and cumulative effects. Effects may be visual, audible, or atmospheric. Beyond the effects from physical alteration of the resource, itself, effects on historic properties may result from changes in such things as local or regional traffic patterns, land use, and living patterns.

(d) Full consideration of historic properties includes an obligation to solicit and consider the views of others in planning and carrying out agency preservation activities (See Standard 5 on Consultation). [Sec. 110(a)(2)(D)].

(e) Full consideration of historic properties must include development of and adherence to agency procedures for section 106 review that are consistent with the regulations of the Advisory Council on Historic Preservation, and, as necessary, with certain provisions of the Native American Graves Protection and Repatriation Act. [Sec. 110(a)(2)(E)(i), (ii), and (iii)].

(f) The term "consistent with the regulations issued by the Council" as used in the NHPA means that an agency's procedures provide for the identification and evaluation of historic properties, the assessment of project and program effects on them, and consultation (specifically including consultation with the State Historic Preservation Officer, Tribal Preservation Officer or other Native American groups where appropriate, and other affected parties) to determine appropriate treatment or mitigation. Such procedures must either adhere to and expand upon the process set out in 36 CFR 800, or include modifications or alternatives to that process that have been reviewed and approved by the Council. Implementation of procedures consistent with the Council's regulations means that those procedures are carried out in a manner consistent with the Guidelines for Standard 1 above.

(g) Full consideration of historic properties includes development of procedures to identify, discourage, and guard against "anticipatory demolition" of a historic property by applicants for Federal assistance or license. Agency procedures should include a system for early warning to applicants and potential applicants that anticipatory demolition of a historic property may result in the loss of Federal assistance, license or permit, or approval for a proposed undertaking.

When an historic property is destroyed or irreparably harmed with the express purpose of circumventing or preordaining the outcome of section 106 review (e.g., demolition or removal of all or part of the property) prior to application for Federal funding, a Federal license, permit, or loan guarantee, the agency considering that application is required by section 110(k) to withhold the assistance sought, unless the agency, after consultation with the Council, determines and documents that "circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant." [Sec. 110(k)].

(h) Agency preservation procedures for section 106 compliance must provide for the disposition of Native American, Alaskan, and Hawaiian human remains and cultural items from Federal or tribal land consistent with section 3(c) of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA).

[Sec. 110(2)(E)(iii)]. The applicable NAGPRA sections on disposition [sections 3(c)(3) and 3(a) & (b)] vest "ownership and right of control" according to a hierarchy of relationships to the cultural items. See NAGPRA (25 U.S.C. 3002(c)) and the Department of Interior's regulations implementing this Act (43 CFR Part 10) for detailed information.

(i) In those cases where consultation pursuant to section 106 does not produce a Memorandum of Agreement (MOA) governing how an agency will "take into account" the adverse effects of its undertaking on historic properties, section 110(l) requires that the final decision(s), reached after consideration of the Council's comments, be made by the agency head and not by any subordinate official, that it be explicit and informed, and that it be a part of the public record available for review. [Sec. 110(l)].

National Historic Landmarks

(j) National Historic Landmarks (NHL) are designated by the Secretary under the authority of the Historic Sites Act of 1935, which authorizes the Secretary to identify historic and archaeological sites, buildings, and objects which "possess exceptional value as commemorating or illustrating the history of the United States." Section 110(f) of the NHPA requires that Federal agencies exercise a higher standard of care when considering undertakings that may directly and adversely affect NHLs. The law requires that agencies, "to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark." In those cases when an agency's undertaking directly and adversely affects an NHL, or when Federal permits, licenses, grants, and other programs and projects under its jurisdiction or carried out by a state or local government pursuant to a Federal delegation or approval so affect an NHL, the agency should consider all prudent and feasible alternatives to avoid an adverse effect on the NHL. [Sec. 110(a)(2)(B) and Sec. 110(f)].

(k) Where such alternatives appear to require undue cost or to compromise the undertaking's goals and objectives, the agency must

balance those goals and objectives with the intent of section 110(f). In doing so, the agency should consider:

> **(1)** the magnitude of the undertaking's harm to the historical, archaeological and cultural qualities of the NHL;
>
> **(2)** the public interest in the NHL and in the undertaking as proposed, and,
>
> **(3)** the effect a mitigation action would have on meeting the goals and objectives of the undertaking.

(l) The Advisory Council's regulations implementing section 106 include specific provisions that also implement section 110(f). These regulations require that the Council must be included in any consultation following a determination by the Federal agency that a Federal or federally assisted undertaking will have an adverse effect on an NHL. The Council must notify the Secretary and may request the Secretary to provide a report to the Council detailing the significance of the affected NHL under section 213 of the NHPA and recommending measures to avoid, minimize or mitigate adverse effects. The Council shall report the outcome of the section 106 process to the Secretary and the head of the agency responsible for the undertaking.

Foreign Historic Properties

(m) In accordance with section 402 of the National Historic Preservation Act Amendments of 1980 (P.L. 96-515) and with Executive Order 12114 (issued January 4, 1979), the agency's preservation program should ensure that, when carrying out work in other countries, the agency will consider the effects of such actions on historic properties, including World Heritage Sites and properties that are eligible for inclusion in the host country's equivalent of the National Register.

(n) The agency's preservation program should ensure that those agency officials, contractors, and other parties responsible for implementing section 402 of the NHPA (16 U.S.C. 470a-z) and Executive Order 12114 have access to personnel with appropriate levels and kinds of professional expertise in historic preservation to identify and assist in the management of such properties.

(o) Efforts to identify and consider effects on historic properties in other countries should be carried out in consultation with the host country's historic preservation authorities, with affected communities and groups, and with relevant professional organizations.

Standard 5. An agency consults with knowledgeable and concerned parties outside the agency about its historic preservation related activities. [Sections 110(a)(2)(D) and (E)(ii)].

Guidelines:

Consultation General Principles

(a) Consultation means the process of seeking, discussing, and considering the views of others, and, where feasible, seeking agreement with them on how historic properties should be identified, considered, and managed. Consultation is built upon the exchange of ideas, not simply providing information. Whether consulting on a specific project or on broader agency programs, the agency should:

> **(1)** make its interests and constraints clear at the beginning;
>
> **(2)** make clear any rules, processes, or schedules applicable to the consultation;
>
> **(3)** acknowledge others' interests and seek to understand them;
>
> **(4)** develop and consider a full range of options; and,
>
> **(5)** try to identify solutions that will leave all parties satisfied.

(b) Consultation should include broad efforts to maintain ongoing communication with all those public and private entities that are interested in or affected by the agency's activities and should not be limited to the consideration of specific projects.

(c) Consultation should be undertaken early in the planning stage of any Federal action that might affect historic properties. Although time limits may be necessary on specific transactions carried out in the course of consultation (e.g., the time allowed to respond to an inquiry), there should be no hard-and-fast time limit on consultation overall. Consultation on a specific undertaking should proceed until agreement is reached or until it becomes clear to the agency that agreement cannot be reached.

(d) While specific consultation requirements and procedures will vary among agencies depending on their missions and programs, the nature of historic properties that might be affected, and other factors, consultation should always include all affected parties. Section 110(a)(2)(D) specifies that an agency's preservation-related activities be carried out in consultation with other Federal, State, and local agencies, Indian tribes, Native Hawaiian organizations, and the private sector. Section 110(a)(2)(E)(ii) requires an agency's procedures for compliance with section 106 to provide a process for the identification and evaluation of historic properties and the development and implementation of agreements, in consultation with SHPOs, local governments, Indian tribes, Native Hawaiian organizations, and the interested public, as appropriate. In addition to having a formal role under the Act, SHPOs and Tribal Preservation Officers can assist in identifying other parties with interests, as well as sources of information.

(e) The agency needs to inform other agencies, organizations, and the public in a timely manner about its projects and programs, and about the possibility of impacts on historic resources of interest to them. However, the agency cannot force a group to express its views,

or participate in the consultation. These groups also bear a responsibility, once they have been made aware that a Federal agency is interested in their views, to provide them in a suitable format and in a timely fashion.

(f) Agency efforts to inform the public about its projects and programs and about the possibility of impacts on historic resources must be carried out in a manner consistent with the provisions of section 304 of the Act, which calls for withholding from disclosure to the public information on the location, character, or ownership of a historic resource where such disclosure may:

> **(1)** cause a significant invasion of privacy;
>
> **(2)** risk harm to the historic resource; or,
>
> **(3)** impede the use of a traditional religious site by practitioners.

Consultation with Native Americans

(g) Inclusion of Indian tribes and Native Hawaiian organizations in the consultation process is imperative and is specifically mandated by the Act [Sec. 110(a)(2)(D)]:

> **(1)** properties with traditional religious and cultural importance to Native American and Native Hawaiian groups may be eligible for the National Register; such properties must be considered, and the appropriate Native American and/or Native Hawaiian groups must be consulted in project and program planning through the section 106 review process (see NHPA Sec. 101(d)(6)(A&B);
>
> **(2)** Section 101(d)(2) of the Act provides that Indian tribes may assume State Historic Preservation Officer responsibilities on tribal lands, when approved to do so by the Secretary of the Interior. In those cases where a tribe has assumed such responsibilities on tribal lands, a Federal agency must consult with the tribe instead of the SHPO, in order to meet agency responsibilities for consultation pursuant to the Act;
>
> **(3)** the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) establishes consultation requirements (43 CFR 10) that may affect or be affected by consultation pursuant to section 106 of the NHPA concerning activities on Federal and Tribal lands that could affect human remains and cultural items. The Archeological Resources Protection Act of 1979 and its uniform regulations also require consultation with tribes and provide a formal process of notification (16 U.S.C. 470cc-dd);
>
> **(4)** Section 110 requires that an agency's efforts to comply with section 106 must also be consistent with the requirements of section 3(c) of NAGPRA concerning the

disposition of human remains and Native American cultural items from Federal and tribal lands.

(h) Where those consulted do not routinely or customarily participate in traditional governmental means of consultation (e.g., through public meetings, exchanges of correspondence), reasonable efforts should be made to accommodate their cultural values and modes of communication.

Standard 6. An agency manages and maintains historic properties under its jurisdiction or control in a manner that considers the preservation of their historic, architectural, archeological, and cultural values. [Sec. 110(a)(1), Sec. 110 (a)(2)(B), Sec. 110(b)].

Guidelines:

(a) Historic properties include any prehistoric or historic districts, sites, buildings, structures, or objects listed in, or eligible for inclusion in, the National Register of Historic Places, including artifacts, records, and material remains related to such properties. To the extent feasible, as part of its property management program, the agency should endeavor to retain historic buildings and structures in their traditional uses and to maintain significant archeological sites and landscapes in their undisturbed condition. [See *Secretary of the Interior's Standards for the Treatment of Historic Properties* (36 CFR 68), and *Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings* and *Guidelines for the Treatment of Historic Landscapes*.]

(b) Where it is no longer feasible to continue the traditional use of a historic structure or to maintain a significant archeological site or cultural landscape in undisturbed condition, the agency should consider an adaptive use that is compatible with the historic property. Adaptive use proposals must be reviewed in accordance with section 106 of the Act. The agency should consider as wide a range of adaptive use options as is feasible given its own management needs, cost factors, and the needs of preservation. A use that severely damages or destroys a historic property is not consistent with the section 110(a)(1) requirement to preserve historic properties in accordance with the professional standards established pursuant to section 101(g) of the Act.

(c) Where modification of a historic property is required to allow it to meet contemporary needs and requirements, the agency should ensure that *The Secretary of the Interior's Standards for the Treatment of Historic Properties* and its accompanying guidelines are followed. Agencies are authorized and directed by section 110(a)(1) to carry out (or cause a lessee or concessioner to carry out) whatever preservation work is necessary (e.g., rehabilitation or documentation) in preparation for use. Proposals to modify historic properties must be reviewed in accordance with section 106 of the Act. When such modification requires disturbance of the earth, and it is not feasible to avoid and protect significant archeological resources, the archeological resources should be excavated and the data recovered. Excavations should focus on areas that will be disturbed during the project, but

overall excavation efforts should be governed by a research design intended to recover significant data contained in the site. Doing so may require excavation of adjacent deposits of the site. All archeological work should conform to the Secretary's "Standards for Archeological Documentation." Under sections 101(a)(7)(A) and 110, agencies are also responsible for ensuring that prehistoric and historic material remains and associated records recovered in conjunction with projects and programs are deposited in repositories capable of proving adequate long-term curatorial services (see 36 CFR 79). Additional requirements for the management and ongoing care of archeological resources may be found in the Antiquities Act (16 U.S.C. 431-433) and the Archeological Resource Protection Act (16 U.S.C. 470aa-mm), and their attendant regulations.

(d) Until and unless decisions are made to manage them in some other manner, historic properties, and properties not yet formally evaluated that may meet the criteria for inclusion in the National Register, should be maintained so that their preservation is ensured through adherence to *The Secretary of the Interior's Standards for the Treatment of Historic Properties*.

(e) The relative cost of various management strategies for a historic structure, ranging from full restoration, to rehabilitation and adaptive use to demolition and replacement with a modern building, should be carefully and objectively considered, with reference to the pertinent requirements of Executive Order 11912, as amended, to the pertinent criteria established in OMB Circular A-94, and to the pertinent principles and methods set forth in the National Bureau of Standards Life-Cycle Costing Manual (NBS Handbook 135).

(**f)** Applicable long and short-term costs should be carefully considered as part of any cost analysis. It is often the case that the short-term costs of preserving and rehabilitating a historic structure are balanced by long-term savings in maintenance or replacement; on the other hand, failure to perform needed cyclic maintenance may shorten the life of a building and decrease the value of investment in its rehabilitation.

(g) Where it is not feasible to maintain a historic property, or to rehabilitate it for contemporary use, the agency may elect to modify it in ways that are inconsistent with the Secretary's "Standards for Rehabilitation," allow it to deteriorate, or demolish it. However, the decision to act or not act to preserve and maintain historic properties should be an explicit one, reached following appropriate consultation within the section 106 review process and in relation to other management needs.

(h) Where the agency determines in accordance with section 106 that maintaining or rehabilitating a historic property for contemporary use in accordance with the Secretary's Standards is not feasible, the agency must provide for appropriate recording of the historic property in accordance with section 110(b) before it is altered, allowed to deteriorate, or demolished.

Standard 7. An agency gives priority to the use of historic properties

in carrying out agency missions. [Sec. 110(a)(1)].

Guidelines:

(a) For the most part, use of historic properties involves the integration of those properties into the activities directly associated with the agency's mission. However, the agency should also be open to the possibility of other uses, such as the use of traditional sacred sites or plant gathering areas by Native Americans, or use of an archeological site as a public interpretive facility.

(b) An agency with historic properties under its jurisdiction and control should maintain an inventory of those properties that notes the current use and condition of each property. The agency should provide for regular inspection of the properties and an adequate budget for their appropriate maintenance.

(c) Section 110(a)(1) applies not only to historic properties under an agency's ownership or control, but to other historic properties available to an agency. An agency that requires the use of non-federal property is required to give priority to the use of historic properties. In such cases the agency should notify potential private-sector offerors of this priority and, if feasible, offer incentives to help ensure that historic properties will be offered.

(d) Where an agency carries out its mission through the award of grant funds for specific activities, and where those activities will inevitably affect historic properties, the agency should, to the extent feasible, design its grants programs so as to encourage grantees to retain and make appropriate use of historic properties in carrying out grant-funded activities.

(e) As provided for in section 111 of the Act, the agency should consider leases, exchanges, and management agreements with other parties as means of providing for the continuing or adaptive use of historic properties.

(f) Surplus properties that are listed in or have been formally determined eligible for the National Register can be transferred to State, tribal, and local governments for historic preservation purposes through the Historic Surplus Property Program. Additionally, properties or portions of surplus properties may be made available to States or local agencies at no cost for parks and recreation through application to the Federal Lands-to-Parks Program. Contact the NPS' Heritage Preservation Services Division or its Recreation Resources Assistance Division in Washington, D.C., for more information on these programs.

(g) The use of historic properties is not mandated where it can be demonstrated to be economically infeasible, or where historic properties will not serve the agency's requirements. The agency's responsibility is to balance the needs of the agency mission, the public interest in protecting historic properties, the costs of preservation, and other relevant public interest factors in making such decisions.

Definitions

(a) ***The Act*** or ***NHPA*** means the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 *et seq*.

(b) ***Advisory Council*** or ***Council*** means the agency, fully titled the Advisory Council on Historic Preservation, established pursuant to section 201 of Title II of the NHPA, that is to be afforded a reasonable opportunity under sections 106 and 110(f) of the NHPA to comment with regard to proposed undertakings, as defined in section 301(7) of the NHPA; that reviews Federal programs pursuant to section 202(a)(6) of the NHPA; and with whose regulations outlining the procedures for complying with the requirements of section 106 of the NHPA ("Protection of Historic Properties," found at 36 CFR Part 800) in accordance with section 110(a)(2)(E)(i), other Federal agencies procedures for compliance with section 106 must be consistent.

(c) ***Agency Head*** means the individual Departmental Secretary, Executive Director or Administrator of an agency, as defined in the Council's regulations (36 CFR Part 800).

(d) ***Cultural items*** is defined in the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA, 25 U.S.C 3002(c)). It includes human remains; associated and unassociated funerary objects (consisting of items intentionally placed with the body in a grave, including those not in possession of a Federal agency); sacred objects, ceremonial objects important to the practice of Native American traditional religions; and objects of cultural patrimony, those items having historical, traditional, or cultural importance to Indian tribes themselves. For a complete definition see section 2(3)(A)-(D) of NAGPRA, and the Department of Interior's regulations implementing the provisions of the Act at 43 CFR Part 10.

(e) ***Historic property*** or ***historic resource*** is defined at section 301(5) of the NHPA and means any prehistoric or historic district, site, building, structure, landscape or object included in, or eligible for inclusion in the National Register, including artifacts, records, and material remains related to such a property or resource. Section 101(d)(6)(A) of the National Historic Preservation Act provides that "properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined to be eligible for inclusion on the National Register."

(f) ***Historic resource*** (see definition for "historic property").

(g) ***Indian tribe*** or ***tribe*** is defined at section 301(4) of the NHPA and means an Indian tribe, band, nation, or other organized group or community, including a Native village, Regional Corporation or Village Corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians. The Secretary of the Interior is responsible for determining an Indian tribe's eligibility for those special programs and services.

(h) ***Memorandum of Agreement*** means the document that records the terms and conditions which have been agreed upon to resolve the adverse effects of an undertaking upon historic properties.

(i) ***National Register*** is defined at section 301(6) of the NHPA and means the list of districts, sites, buildings, structures and objects significant in American history, architecture, archeology, engineering, and culture established under section 101 of the NHPA and maintained by the Secretary of the Interior and fully titled the "National Register of Historic Places."

(j) ***Native Hawaiian*** is defined in the NHPA at section 301(17) and means any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii.

(k) ***Native Hawaiian organization*** as defined at section 301(18) of the NHPA means any organization which--

> **(1)** serves and represents the interests of Native Hawaiians;
>
> **(2)** has as a primary and stated purpose the provision of services to Native Hawaiians; and,
>
> **(3)** has demonstrated expertise in aspects of historic preservation that are culturally significant to Native Hawaiians.

The term includes, but is not limited to, the Office of Hawaiian Affairs of the State of Hawaii and *Hui Malama I Na Kapuna O Hawai'i Nei*, an organization incorporated under the laws of the State of Hawaii.

(l) ***Preservation*** or ***historic preservation*** as defined in the NHPA at section 301(8) includes identification, evaluation, recordation, documentation, curation, acquisition, protection, management, rehabilitation, restoration, stabilization, maintenance, research, interpretation, conservation, and education and training regarding the foregoing activities or any combination of the foregoing activities.

(m) ***Preservation Officer*** means the individual in the agency responsible for managing the agency's historic preservation program and coordinating all preservation activities. All federal agencies are required to appoint a Preservation Officer under section 110(c) of the National Historic Preservation Act (unless specifically exempted under section 214 of the NHPA). The Preservation Officer and the Agency Head are not necessarily one and the same individual.

(n) ***Secretary*** is defined at section 301(11) of the NHPA and means the Secretary of the Interior acting through the Director of the National Park Service, except where otherwise specified.

(o) ***Secretary's Standards*** means the ***Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*** (available from the National Park Service), the project and program standards and guidelines for implementing the NHPA. They are technical guidance concerning archeological and historic preservation activities and methods. The complete Secretary's Standards currently address each of the following activities: Preservation Planning, Identification, Evaluation, Registration, Historical Documentation, Architectural and Engineering

Documentation, Archeological Documentation, Treatment of Historic Properties (including Rehabilitation), and Professional Qualifications.

(p) ***State Historic Preservation Officer*** (SHPO) means the official appointed or designated pursuant to section 101(b)(1) of the NHPA to administer the State historic preservation program or a representative designated to act for the SHPO.

(q) ***Traditional Cultural Property*** is defined as a property that is associated with cultural practices or beliefs of a living community that (1) are rooted in that community's history, and (2) are important in maintaining the continuing cultural identity of the community. Readers should refer to National ***Register Bulletin 38: Guidelines for Evaluating and Documenting Traditional Cultural Properties*** (available from the National Park Service) for more information.

(r) ***Tribal Preservation Officer*** or ***Tribal Historic Preservation Officer*** means the official appointed or designated by the Tribe to carry out the historic preservation program responsibilities that the Tribe has assumed pursuant to section 101(d) of the NHPA.

(s) ***Tribal lands*** is defined at section 301(14) of the NHPA and means -

> **(1)** all lands within the exterior boundaries of any Indian reservation; and,
>
> **(2)** all dependent Indian communities.

(t) ***Undertaking*** as defined in the NHPA at section 301(7) means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including -

> **(1)** those carried out by or on behalf of the agency;
>
> **(2)** those carried out with Federal financial assistance;
>
> **(3)** those requiring a Federal permit, license, or approval; and,
>
> **(4)** those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency.

Appendix A

Section 110 of the National Historic Preservation Act (16 U.S.C. 470h-2):

(a)

> **(1)** The heads of all Federal agencies shall assume responsibility for the preservation of historic properties which are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for purposes of carrying out agency responsibilities, each Federal agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency

shall undertake, consistent with the preservation of such properties and the mission of the agency and the professional standards established pursuant to section 101(g), any preservation, as may be necessary to carry out this section. [Standards 1, 6 and 7].

(2) Each Federal agency shall establish (unless exempted pursuant to section 214), in consultation with the Secretary [of the Interior], a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties. [Standard 1]. Such program shall ensure -

> **(A)** that historic properties under the jurisdiction or control of the agency are identified, evaluated, and nominated to the National Register [Standards 2 and 3];
>
> **(B)** that such properties under the jurisdiction or control of the agency as are listed in or may be eligible for the National Register are managed and maintained in a way that considers the preservation of their historic, archeological, architectural, and cultural values in compliance with section 106 and gives special consideration to the preservation of such values in the case of properties designated as having national significance [Standard 4];
>
> **(C)** that the preservation of properties not under the jurisdiction or control of the agency, but subject to be potentially affected by agency actions are given full consideration in planning [Standards 4 and 6];
>
> **(D)** that the agency's preservation-related activities are carried out in consultation with other Federal, State, and local agencies, Indian tribes, Native Hawaiian organizations carrying out historic preservation planning activities, and with the private sector [Standard 5]; and,
>
> **(E)** that the agency's procedures for compliance with section 106 -
>
> > **(i)** are consistent with regulations issued by the [Advisory] Council [on Historic Preservation] pursuant to section 211 [Standard 4];
> >
> > **(ii)** provide a process for the

identification and evaluation of historic properties for listing in the National Register and the development and implementation of agreements, in consultation with State Historic Preservation Officers, local governments, Indian tribes, Native Hawaiian organizations, and the interested public, as appropriate, regarding the means by which adverse effects on such properties will be considered [Standard 4]; and,

(iii) provide for the disposition of Native American cultural items from Federal or tribal land in a manner consistent with section 3(c) of the Native American Graves Protection and Repatriation Act (25 U.S.C. 3002(c)) [Standard 4].

(b) Each Federal agency shall initiate measures to assure that where, as a result of Federal action or assistance carried out by such agency, a historic property is to be substantially altered or demolished, timely steps are taken to make or have made appropriate records, and that such records then be deposited, in accordance with section 101(a), in the Library of Congress or with such other appropriate agency as may be designated by the Secretary, for future use and reference [Standard 6].

(c) The head of each Federal agency shall, unless exempted under section 214, designate a qualified official to be known as the agency's "preservation officer" who shall be responsible for coordinating that agency's activities under this Act. Each Preservation Officer may, in order to be considered qualified, satisfactorily complete an appropriate training program established by the Secretary under section 101(h) [Standard 1].

(d) Consistent with the agency's mission and mandates, all Federal agencies shall carry out agency programs and projects (including those under which any federal assistance is provided or any Federal license, permit, or other approval is required) in accordance with the purposes of this Act and, give consideration to programs and projects which will further the purposes of this Act [Standard 1].

(e) The Secretary shall review and approve the plans of transferees of surplus federally owned historic properties not later than ninety days after his receipt of such plans to ensure that the prehistorical, historical, architectural, or culturally significant values will be

preserved or enhanced [Standard 7].

(f) Prior to the approval of any Federal undertaking which may directly and adversely affect any National Historic Landmark, the head of the responsible Federal agency shall, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark, and shall afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking [Standard 4].

(g) Each Federal agency may include the costs of preservation activities of such agency under this Act as eligible project costs in all undertakings of such agency or assisted by such agency. The eligible project costs may also include amounts paid by a Federal agency to any State to be used in carrying out such preservation responsibilities of the Federal agency under this Act, and reasonable costs may be charged to Federal licensees and permittees as a condition to the issuance of such license or permit [Standard 1].

(h) The Secretary shall establish an annual preservation awards program under which he may make monetary awards in amounts not to exceed $1,000 and provide citations for special achievement to officers and employees of Federal, State, and certified local governments in recognition of their outstanding contributions to the preservation of historic resources. Such program may include the issuance of annual awards by the president of the United States to any citizen of the United States recommended for such award by the Secretary.

(i) Nothing in this Act shall be construed to require the preparation of an environmental impact statement where such statement would not otherwise be required under the National Environmental Policy Act of 1969, and nothing in this Act shall be construed to provide any exemption from any requirement respecting the preparation of such a statement under such Act.

(j) The Secretary shall promulgate regulations under which the requirements of this section may be waived in whole or in part in the event of a major natural disaster or an imminent threat to the national security.

(k) Each Federal agency shall ensure that the agency will not grant a loan, loan guarantee, permit, license, or other assistance to an applicant who, with intent to avoid the requirements of section 106, has intentionally significantly adversely affected a historic property to which the grant would relate, or having the legal power to prevent it, allowed such significant adverse effect to occur, unless the agency, after consultation with the Council, determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant [Standard 4].

(l) With respect to any undertaking subject to section 106 which adversely affects any property included in or eligible for inclusion in the National Register, and for which a Federal agency has not entered into an agreement with the Council, the head of such agency shall document any decision made pursuant to section 106. The head of

such agency may not delegate his or her responsibilities pursuant to such section. Where a section 106 memorandum of agreement has been executed with respect to an undertaking, such memorandum shall govern the undertaking and all of its parts [Standard 4].

Appendix B

Purposes of the National Historic Preservation Act:

Section 110(d) of the National Historic Preservation Act (the Act) calls on all Federal agencies, consistent with their mission and mandates, to carry out their activities in accordance with the purposes of the Act and to consider programs and projects that will further the purposes of the Act. The purposes of the Act are set forth in sections 1 and 2. These sections are directly germane to all Federal preservation programs:

Section 1 (b): The Congress finds and declares that -

(1) the spirit and direction of the Nation are founded upon and reflected in its historic heritage;

(2) the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people;

(3) historic properties significant to the Nation's heritage are being lost or substantially altered, often inadvertently, with increasing frequency;

(4) the preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans;

(**5)** in the face of ever-increasing extensions of urban centers, highways, and residential, commercial, and industrial developments, the present governmental and nongovernmental historic preservation programs and activities are inadequate to ensure future generations a genuine opportunity to appreciate and enjoy the rich heritage of our Nation;

(6) the increased knowledge of our historic resources, the establishment of better means of identifying and administering them, and the encouragement of their preservation will improve the planning and execution of federal and federally assisted projects and will assist economic growth and development; and,

(7) although the major burdens of historic preservation have been borne and major efforts initiated by private agencies and individuals, and both should continue to play a vital role, it is nevertheless necessary and appropriate for the Federal Government to accelerate its historic preservation programs and activities, to give maximum encouragement to agencies and individuals undertaking preservation by private means, and to assist State and local governments and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

Section 2: It shall be the policy of the Federal Government, in cooperation with other nations and in partnership with the States, local governments, Indian tribes, and private organizations and individuals to--

(1) use measures, including financial and technical assistance, to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations;

(2) provide leadership in the preservation of the prehistoric and historic resources of the United States and of the international community of nations and in the administration of the national preservation program in partnership with the States, Indian tribes, Native Hawaiians, and local governments;

(3) administer federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations;

(4) contribute to the preservation of nonfederally owned prehistoric and historic resources and give maximum encouragement to organizations and individuals undertaking preservation by private means;

(5) encourage the public and private preservation and utilization of all usable elements of the Nation's historic built environment; and

(6) assist State and local governments, Indian tribes and Native Hawaiian organizations and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

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Army Alternate Procedures
(Federal Register Vol. 69, No. 74)

Notices

Federal Register

Vol. 69, No. 74

Friday, April 16, 2004

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

Amendments to the Army Alternate Procedures

AGENCY: Advisory Council on Historic Preservation.

ACTION: Notice of approval of amendments to the Army Alternate Procedures.

SUMMARY: On March 25, 2004, the Advisory Council on Historic Preservation approved technical and administrative amendments to the Army Alternate Procedures. Those Army Alternate Procedures set forth a process that Army installations can follow in order to meet their historic preservation review responsibilities under the National Historic Preservation Act. The main purposes of the amendments are to conform the Alternate Procedures to the Army's internal reorganization, and clarify its exemption regarding designated surface danger zones.

DATES: The amendments to the Army Alternate Procedures went into effect on March 25, 2004.

FOR FURTHER INFORMATION CONTACT: Mr. David Berwick, Army Program Manager, Advisory Council on Historic Preservation, 1100 Pennsylvania Avenue, NW., Suite 809, Washington, DC 20004. *dberwick@achp.gov.*

SUPPLEMENTARY INFORMATION: Section 106 of the National Historic Preservation Act, 16 U.S.C. 470f, requires Federal agencies to consider the effects of undertakings on historic properties and provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment with regard to such undertakings. The ACHP has issued the regulations that set forth the process through which Federal agencies comply with these duties. The regulations are codified under 36 CFR part 800 ("Section 106 regulations'').

The section 106 regulations, under 36 CFR 800.14(a), provide that an agency may develop procedures to implement section 106 and substitute them for subpart B as long as they are consistent with the section 106 regulations.

I. Background

On July 13, 2001, the ACHP approved the Army Alternate Procedures (AAP). These were subsequently adopted by the Army and published in the **Federal Register** on March 6, 2002. For further general background on the AAP as originally adopted, please refer to that **Federal Register** notice (67 FR 10138).

Since then, the Army has internally reorganized in a way that directly affects the implementation of the AAP. This reorganization required revisions of the AAP to reflect the new management structure adopted by the Army. Without changes to the AAP, it would be difficult for the Army to implement the procedures as originally adopted. Furthermore, continued use of the AAP, as originally published, would create confusion with consulting parties who wish to contact Army personnel concerning AAP implementation, since the roles of Army staff have changed. Other technical amendments were also needed to clarify certain aspects of the AAP.

Therefore, pursuant to section 7.1(d) of the AAP, the Chairman of the ACHP approved the technical and administrative amendments to the AAP outlined below. These amendments went into effect on March 25, 2004.

II. Summary of Amendments

This section summarizes the changes made to the AAP.

The name "Army Alternate Procedures to 36 CFR Part 800'' has been changed to "Army Alternate Procedures for Historic Properties'' to more easily identify these procedures with the Army's historic preservation requirements.

With the Army's new Installation Management Agency (IMA) structure, the responsibility for implementing the AAP has shifted from the installation commander to the garrison commander. As a result, all references to installation commander in the AAP have been changed to reflect this new structure. Likewise, IMA now assumes the roles and responsibilities given in the AAP to the major commands (MACOMs). Reference to MACOMs has been changed to reflect the new structure. Internal coordination, from garrison commanders, through the IMA, National Guard Bureau or applicable MACOM to the Assistant Chief of Staff for Installation Management has been clarified.

Reference to AR 200–4 (a Cultural Resources Management policy of the Army) has been replaced with the more general term "Army policy.'' AR 200–4 is scheduled to be incorporated into AR 200–1; however, this has not been completed at this time.

The more cumbersome phrasing of "commanders electing to comply with'' has been simplified by saying "commanders complying with.'' Since the AAP clearly states that following its process (as opposed to the one outlined in subpart B of the Section 106 regulations) is optional, it was not necessary to reiterate this optional nature throughout the AAP.

The following specific changes have been made to the AAP and are referenced here by the sections in which these changes can be found.

Section 1.1(e) (Application): In the previously published version of the AAP, this section was a fairly lengthy discussion of the optional features of the AAP. This section has been shortened and more clearly states that the authority to operate, or not operate, under the AAP rests with the Army.

Section 1.6 (Participants): This section was substantially changed to reflect the new Army structure. As explained above, the IMA, as the Army's installation management agency, is now responsible for ensuring that garrison commanders have identified and programmed the resources necessary to meet the installation's responsibilities under the AAP. The Assistant Chief of Staff for Installation Management (ACSIM) will not only be reviewing an installation's Historic Properties Component (HPC) but will endorse it before it is sent back to the installation. These changes will provide more consistency in application throughout the Army and will assist the ACHP and Army Headquarters in fulfilling program review responsibilities outlined in section 7.1 of the AAP.

Section 4.5 (Exempted Undertakings): This section adds an example to the exemption regarding "military activities in existing designated surface danger zones'' (subsection (a)(3)(iv)) to clarify

that surface danger zones are only exempt where there is imminent threat to human health and safety, such as in dudded impact areas where unexploded ordnance exists.

III. Text of AAP as Amended

What follows is the full text of the AAP as amended (copies of the amended AAP can also be found on the ACHP Web site at *www.achp.gov/army.html*):

Army Alternate Procedures for Historic Properties

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Section 1.0: Introduction

1.1 Purpose and Introduction

(a) *Purpose.* Section 106 of the National Historic Preservation Act (Act) requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (Council) a reasonable opportunity to comment on such undertakings. The section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation between the Army, and consulting parties and the public. The purposes of these alternate procedures are to provide for more efficient, consistent and comprehensive Army compliance with the goals and mandates of section 106 of the Act, to encourage more thoughtful consideration and early planning for historic properties, and to better support the Army's ability to accomplish its national defense mission. These alternate procedures further these purposes by establishing a proactive planning and management approach that stands in place of the formal project-by-project review process prescribed by the Council's regulations at 36 CFR part 800. The approach set forth in these alternate procedures relies on the Army's existing internal planning, funding and decision making processes.

(b) *Relation to other provisions of the Act.* Section 106 is related to other provisions of the Act designed to further the national policy on historic preservation. References to those related provisions are included in these procedures to identify circumstances where actions may be affected by the independent obligations of those other provisions.

(c) *Relation to internal Army Regulations.* Internal agency policy sets forth the Army's requirements for complying with the Act, the Archeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), Indian Sacred Sites under Executive Order 13007 (Indian Sacred Sites), Executive Order 13175, (Consultation and Coordination with Indian Tribal Governments), and 36 CFR part 79 (Curation of Federally-Owned and Administered Archaeological Collections). The Army requires all installations (other than those receiving a variance) to prepare an Integrated Cultural Resource Management Plan (ICRMP). The ICRMP integrates the entirety of the installation cultural resources program with the ongoing military mission, allows identification of potential conflicts between the installation's mission and cultural resources, and identifies actions necessary to meet statutory and regulatory requirements.

(d) These procedures utilize to the maximum extent possible existing internal Army program requirements to meet section 106 requirements. Each ICRMP developed by an installation shall have a Historic Properties Component (HPC) to ensure compliance with section 106 of the Act on a programmatic, as opposed to project-by-project, basis. Individual installations shall coordinate with internal staff elements, consult with consulting parties, and, where appropriate, consider the views of the public, on development of the HPC to ensure that the HPC includes adequate procedures for identification, evaluation, and treatment of historic properties over the five-year ICRMP planning period. Installations shall substantially involve consulting parties on development of the HPC, not the entire ICRMP, since other components of the ICRMP involve management of cultural resources beyond the statutory and regulatory authority and jurisdiction of consulting parties. Neither these procedures nor a certified HPC relieves the Army of its responsibilities to comply with other cultural resources laws such as NAGPRA and ARPA.

(e) *Application.* These alternate procedures recognize that certain installations may be operating under the review procedures in 36 CFR part 800. Application of these alternate procedures and the authority to revert to operation under 36 CFR part 800 rests with the Army.

(f) *Role of consulting parties.* These alternate procedures promote early and effective participation of State Historic Preservation Officers (SHPOs), Tribal Historic Preservation Officers (THPOs), Federally recognized Indian Tribes, and Native Hawaiian organizations in Army planning and management of historic properties. These consulting parties play a regulatory role in development of and signature on the HPC. Once the HPC has been finalized, SHPOs, THPOs, Federally recognized Indian Tribes, and Native Hawaiian organizations will have continued opportunities to participate in implementation by reviewing and monitoring installation compliance and providing expertise concerning identification, evaluation, and management of historic properties. These alternate procedures establish minimum requirements for compliance. Installations are encouraged to tailor their planning documents to their particular needs, and, where appropriate, supplement these minimum requirements.

(g) *Role of the public.* The public includes national, regional, or local organizations and individuals with an interest in historic preservation, and local governments when not participating as consulting parties. Public views are important to a fully

informed decision making process under these procedures. The process established by the National Environmental Policy Act (NEPA), as implemented by the regulations published by the Council on Environmental Quality and Army Regulation 200–2 "Environmental Effects of Army Actions'' (AR 200–2) is designed to ensure meaningful public participation in Federal agency decision making. Installation commanders will use the NEPA process to the greatest extent practicable to provide for public participation under these procedures for installation activities.

(h) Nothing in these procedures changes any rights reserved to any Indian Tribe by treaty or otherwise granted to any Indian Tribe, Native Hawaiian organization, or to their members by Federal law, including Statute, regulation or Executive Order. These procedures are designed to ensure that the Army fully meets its responsibilities to consult with Federally recognized Indian Tribes and Native Hawaiian organizations when Army activities may affect historic properties of traditional religious and cultural importance to them.

1.2 Methods of Complying With Section 106 of the Act

(a) Each installation complying with section 106 of the Act through these procedures in lieu of 36 CFR part 800 will develop a Draft HPC, in consultation with consulting parties, and request certification of its HPC from the Council. Once certified, an installation shall comply with section 106 of the Act through implementation of its HPC for a five-year period.

(b) Prior to HPC certification, installations shall continue to comply with section 106 of the Act by reviewing undertakings pursuant to 36 CFR part 800.

(c) Installations that do not comply with section 106 of the Act through these procedures shall continue to comply with section 106 of the Act by following 36 CFR part 800.

(d) Where the Army proposes to conduct any undertaking on Tribal land where a Federally recognized Indian Tribe has developed Tribal historic preservation regulations pursuant to section 101(d)(5) of the Act, and those regulations operate in place of review under 36 CFR part 800, the Army shall follow those Tribal historic preservation regulations prior to approving and while conducting the undertaking.

1.3 Authority

(a) These procedures are promulgated pursuant to section 110(a)(2)(E) of the Act (16 U.S.C. 470h–2) which directs Federal agencies to develop procedures for implementing section 106 of the Act, and 36 CFR 800.14(a) which authorizes Federal agencies, in consultation with the Council, to develop alternative procedures to implement the section 106 process, that, after Council concurrence, substitute for the regulations set forth in 36 CFR part 800. The Council retains final authority to determine whether the Army's alternate procedures are consistent with 36 CFR part 800.

1.4 Scope

(a) These procedures apply to all levels of the Active Army, the Army National Guard, the U.S. Army Reserve, including all installations and activities under the control of the Army by ownership, lease, license, public land withdrawal, or, any similar instrument, where the Agency Official elects to comply with these procedures in lieu of 36 CFR part 800. All of the above shall be referred to in these procedures as the Army, unless otherwise noted.

(b) These procedures do not apply to the Civil Works functions of the U.S. Army Corps of Engineers.

(c) These procedures shall not apply to installations or activities where the Garrison commander has elected, pursuant to section 2.1, to continue to comply with section 106 of the Act through the process set forth under 36 CFR part 800.

1.5 Definitions

Act means the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et seq.*).

Adverse effects are those effects of an undertaking that may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion on the National Register of Historic Places (National Register) in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The criteria of adverse effect also require consideration of all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Agency Official is the Army official with jurisdiction over an undertaking as set forth in section 1.6(a).

Area of potential effects (APE) means the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

Army means Active Army, Army National Guard, U.S. Army Reserve, and all installations and activities as described in section 1.4.

Comment, when used in relation to the Council, means the findings and recommendations of the Council formally provided in writing to the Secretary of the Army under section 106 of the Act.

Consulting parties are those parties that have a consultative role in the section 106 process; these parties are the SHPO, the THPO, Federally recognized Indian Tribes, Native Hawaiian organizations, representatives of local governments, and applicants for Federal permits, licenses, assistance or other forms of Federal approval. Members of the public may participate as consulting parties upon the invitation of the Garrison commander.

Consultation means the formal process of seeking, discussing, identifying and considering the views of consulting parties. For purposes of these procedures, consultation with Federally recognized Indian Tribes means consultation on a government-to-government basis as defined below.

Coordination, for the purposes of these procedures, means the informal communication and exchange of information and ideas between consulting parties concerning historic preservation issues affecting the Army. Coordination is intended to be an informal process, on a staff-to-staff basis, for routine management issues as distinguished from the formal consultation and tribal consultation processes as defined by these procedures.

Council means the Advisory Council on Historic Preservation or a Council member or employee designated to act for the Council.

Day or days means calendar days.

Effect means alteration to the characteristics of an historic property that qualify it for inclusion in or make it eligible for inclusion in the National Register.

Federally recognized Indian Tribe, for the purposes of these procedures, means: (i) an Indian or Alaska Native Tribe, band, nation, pueblo, village or community within the continental United States presently acknowledged

by the Secretary of the Interior to exist as an Indian Tribe pursuant to the Federally Recognized Indian Tribe List Act, Public Law 103–454; and (ii) Regional Corporations or Village Corporations, as those terms are defined in section 3 of the Alaskan Native Claims Settlement Act (43 U.S.C. 1602), which are recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

Government-to-government relations, for the purposes of these procedures, means relations formally established between the Army and Federally recognized Indian Tribes through their respective governmental structures. In recognition of a Federally recognized Indian Tribe's status as a sovereign nation, formal government-to-government relations are established and maintained directly between Garrison commanders and the heads of Tribal governments. Garrison commanders initiate government-to-government relations with Federally recognized Indian Tribes by means of formal, written communication to the heads of Tribal governments. Such letters should designate an installation official who is authorized to conduct follow-on consultations with the Tribe's designated representative. Garrison commanders are encouraged to meet face-to-face with the heads of Tribal governments as part of the process to initiate government-to-government consultation. Any final decisions on installation HPCs that have been the subject of government-to-government consultation will be formally transmitted from the Garrison commander to the head of the Tribal government.

Historic preservation or preservation includes identification, evaluation, recordation, documentation, curation, acquisition, protection, management, rehabilitation, restoration, stabilization, maintenance, research, interpretation, conservation, and education and training regarding the foregoing activities or any combination of the foregoing activities.

Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register maintained by the Secretary of the Interior. The term includes artifacts, records, and remains that are related to and located within such properties. The term includes historic properties of traditional religious and cultural importance to a Federally recognized Indian Tribe or Native Hawaiian organization. The term "eligible for inclusion in the National Register'' includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria.

Historic Properties Component (HPC) means, in accordance with these procedures, that portion of the ICRMP which relates directly to the implementation of section 106 of the Act. The HPC is a five-year plan that provides for installation identification, evaluation, assessment of effects, treatment, and management of historic properties, including those of traditional religious and cultural importance to a Federally recognized Indian Tribe or Native Hawaiian organization. The HPC is the basis upon which an installation's program is evaluated for certification for purposes of these procedures. While the HPC remains a component of the ICRMP, it stands alone as a legal compliance document under these procedures.

Installation means a grouping of facilities located in the same vicinity, which are under control of the Army and used by Army organizations. This includes land and improvements. In addition to those used primarily by soldiers, the term "installation'' applies to real properties such as depots, arsenals, ammunition plants (both contractor and government operated), hospitals, terminals, and other special mission installations. The term may also be applied to a state or a region in which the Army maintains facilities. For example, the Army National Guard may consider National Guard facilities within a state to be one installation and the U.S. Army Reserve may consider Regional Support Centers to be installations. Under these procedures, a subinstallation may be certified individually or as part of its support installation.

Integrated Cultural Resources Management Plan (ICRMP) is a five-year plan developed and implemented by a Garrison commander to provide for the management of cultural resources in a way that maximizes beneficial effects on such resources and minimizes adverse effects and impacts without impeding the mission of the Army.

National Historic Landmark (NHL) means a historic property that the Secretary of the Interior has designated a National Historic Landmark pursuant to the Historic Sites Act of 1935, Public Law 100–17.

National Register means the National Register of Historic Places maintained by the Secretary of the Interior.

National Register Criteria means the criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register (36 CFR part 60).

Native Hawaiian means any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii.

Native Hawaiian organization means any organization which (1) serves and represents the interests of Native Hawaiians, (2) has as a primary and stated purpose the provision of services to Native Hawaiians, and (3) has demonstrated expertise in aspects of historic preservation that are significant to Native Hawaiians. Such organizations include the Office of Hawaiian Affairs and Hui Malama I Na Kupuna 'O Hawai'i Nei.

NEPA process means the decision making process established by the National Environmental Policy Act as implemented by the regulations published by the Council on Environmental Quality and AR 200–2. The NEPA process involves preparation of a NEPA document, either a Record of Environmental Consideration, an Environmental Assessment (EA) or an Environmental Impact Statement (EIS), followed by a decision document. An EA results in either a Finding of No Significant Impact or Notice of Intent to prepare an EIS. An EIS results in a Record of Decision.

Professional standards means, for the purposes of these procedures, those standards set forth in the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716), which apply to individuals conducting technical work for the Army. Tribal members and Native Hawaiians are uniquely qualified to identify and assist in the evaluation, assessment of effect, and treatment of historic properties to which they attach traditional religious and cultural importance. When the Army requests assistance from Federally recognized Indian Tribes and Native Hawaiian organizations to aid in the identification, evaluation, assessment of effects and treatment of historic properties of traditional religious and cultural importance, such Tribal members and Native Hawaiians need not meet the Secretary of Interior's Professional Qualifications Standards (48 FR 44738–44739).

Review and monitoring means an informal process in which an installation shall coordinate with consulting parties to discuss proposed undertakings for the upcoming year, results of plan implementation during the previous year, the overall

effectiveness of the installation's HPC, and the need for making amendments to it. At a minimum, this review and monitoring shall be conducted annually.

Sovereign or sovereignty, with respect to Federally recognized Indian Tribes means the exercise of inherent sovereign powers over their members and territories.

State Historic Preservation Officer (SHPO) means the official appointed or designated pursuant to section 101(b)(1) of the Act to administer the state historic preservation program or a representative designated to act for the State Historic Preservation Officer.

Surface Danger Zone means the area designated on the ground of a training complex (to include associated safety areas) for the vertical and lateral containment of projectiles, fragments, debris, and components resulting from the firing or detonation of weapon systems to include exploded and unexploded ordnance.

Tribal consultation means seeking, discussing, identifying and considering Tribal views through good faith dialogue with Federally recognized Indian Tribes on a government-to-government basis in recognition of the unique relationship between Federal and Tribal governments and the status of Federally recognized Indian Tribes as sovereign nations (see government-to-government relations). The Tribal Historic Preservation Officer (THPO) serves as the Tribal official for government-to-government consultation for undertakings affecting historic properties off Tribal lands only where the Tribal government has designated the THPO as the Tribe's designated representative responsible for carrying out such functions.

Tribal Historic Preservation Officer (THPO) means the Tribal official, appointed by the head of the Tribal government or as designated by a Tribal ordinance or preservation program, who has assumed the responsibilities of the SHPO for purposes of section 106 compliance on Tribal lands in accordance with section 101(d)(2) of the Act.

Tribal lands mean all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities.

Undertaking means a project, activity, or program that is funded in whole or in part under the direct or indirect jurisdiction of the Army, including those carried out by or on behalf of the Army, those carried out in whole or in part with Army funds, and those requiring Army approval.

1.6 Participants

(a) Army.

(1) The Army Agency Official with jurisdiction over an undertaking takes legal and financial responsibility for section 106 compliance either through implementing these alternate procedures or continuing operation under 36 CFR part 800. For purposes of these procedures, the Army Agency Official with jurisdiction over an undertaking is the Garrison commander or official representative designated by the Garrison commander. The Army Agency Official shall ensure that professional standards, as defined in section 1.5, are met in the conduct of identification, evaluation, assessment of effects, and treatment of historic properties.

(i) Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health) (DASA (ESOH)) is the Army Federal Preservation Officer (FPO), pursuant to designation by the Assistant Secretary of the Army (Installations and Environment), responsible for policy, program direction and oversight of the Army's responsibilities under the Act. The DASA (ESOH) is responsible for ensuring the Army's implementation of these alternate procedures.

(ii) The ACSIM is the Army staff proponent for implementing the Act and development of Army-specific guidance implementing the Act. Proponents for execution of ACSIM responsibilities under these procedures are the Director of Environmental Programs (DEP) and the Commander, U.S. Army Environmental Center (USAEC). The ACSIM shall:

(A) Carry out the ACSIM's assigned staff functions for NHPA compliance in accordance with Army regulations;

(B) Review and endorse AAP notices, HPCs, associated documents, and installation historic preservation programs in accordance with these procedures and,

(C) Serve as the Agency Official for the Army for purposes of consultation and coordination with consulting parties and the public on development of these alternate procedures, amendment and implementing guidance.

(iii) Installation Management Activity (IMA), National Guard Bureau (NGB) or applicable MACOM shall:

(A) Ensure Garrison commanders (includes Adjutants General) identify and program resources necessary to meet the requirements of these procedures. Staff all actions in accordance with these procedures.

(B) Review HPCs prepared by Garrison Commanders to ensure that HPCs provide equitable, efficient and effective resource management.

(C) Forward AAP notices and HPCs to the ACSIM for review and endorsement.

(iv) Garrison Commanders (includes Commanders of U.S. Army Reserve Regional Support Centers and Adjutants General) shall:

(A) Carry out their assigned historic property management and compliance responsibilities set forth in Army policy;

(B) As the Agency Officials responsible for installation undertakings, ensure that such undertakings are implemented in accordance with either these procedures or 36 CFR part 800;

(C) Develop a historic preservation program, including an HPC, in accordance with section 3.0 and Army policy;

(D) Serve as the Agency Official responsible for consulting on HPC and its implementation with SHPOs, THPOs, Native Hawaiian organizations, and Federally recognized Indian Tribes when required under these procedures. Tribal consultation shall occur with Federally recognized Indian Tribes on a government-to-government basis, as defined in section 1.5; and,

(E) Ensure that such consultation provides a reasonable opportunity for the SHPO, THPO, Federally recognized Indian Tribes, and Native Hawaiian organizations to identify their concerns with the identification, evaluation, assessment of effect and treatment of historic properties, and after consideration, address such concerns.

(F) When implementing these procedures:

(1) Sign the HPC and amendments thereto, recognizing that the HPC is the installation's procedure for complying with section 106 of the Act;

(2) Invite the SHPO, THPO, Federally recognized Indian Tribe or Native Hawaiian organization to consult in development of and sign the HPC;

(3) Implement a signed HPC to comply with section 106 of the Act; and,

(4) Prior to certification, comply with section 106 of the Act through review of undertakings under 36 CFR part 800.

(b) Advisory Council on Historic Preservation.

(1) The Council issues regulations to implement section 106 of the Act; provides guidance and advice on the application of its regulations, 36 CFR part 800; oversees the operation of the section 106 process; enters into agreements with Federally recognized Indian Tribes under section 101(d)(5) of the Act; and approves Federal agency procedures for substitution of the Council's regulations. Consulting parties and the public, may at any time seek

advice, guidance, and assistance from the Council on the application of these procedures.

(2) For the purposes of these procedures, the Council reviews and evaluates HPCs and certifies that an installation is authorized to implement an approved HPC.

(c) State Historic Preservation Officer.

(1) The SHPO administers the national preservation program at the State level and is responsible for conducting comprehensive statewide surveys of historic properties and for maintaining inventories of these properties. Under section 101(b)(3)(E) of the Act, SHPOs are directly responsible for advising and assisting Federal agencies, such as the Army, in carrying out their historic preservation responsibilities. For purposes of these procedures, the SHPO advises and consults with individual installations in the development, implementation, recertification and Major Amendment of the HPC.

(2) The SHPO has access to expertise regarding historic properties within the State. The SHPO, throughout HPC implementation, may provide assistance to the Garrison commander and ensure access to and application of such expertise.

(3) When participating as a consulting party, the SHPO is invited to sign the HPC.

(d) Federally Recognized Indian Tribes and Native Hawaiian Organizations.

(1) Section 101(d)(6)(B) of the Act requires the Army to consult with any Federally recognized Indian Tribe and Native Hawaiian organization that attaches traditional religious and cultural importance to historic properties that may be affected by an undertaking. For Federally recognized Indian Tribes, this consultation may take place for historic properties located both on and off Tribal lands. Consultation with Federally recognized Indian Tribes shall be conducted as Tribal consultation and initiated on a government-to-government basis, and shall occur through the provisions of these procedures. While Garrison commanders must invite Federally recognized Indian Tribes to participate in government-to-government consultation, as sovereign nations, such Tribes may decline to participate.

(2) Where an installation's undertakings may affect historic properties of traditional religious and cultural importance to a Federally recognized Indian Tribe or Native Hawaiian organization, that Tribe or organization shall be invited to participate as a consulting party on the development, implementation, recertification and Major Amendment to the HPC.

(3) When participating as consulting parties, Federally recognized Indian Tribes and Native Hawaiian organizations shall be invited to sign the HPC.

(e) Tribal Historic Preservation Officer.

(1) Where the Secretary of the Interior has authorized a Federally recognized Indian Tribe to carry out some or all of the SHPO responsibilities on Tribal lands pursuant to section 101(d)(2) of the Act, the THPO acts as a consulting party on the development, implementation, recertification and Major Amendment to the HPC. The THPO participates as a consulting party when:

(i) An installation's undertakings occur on or affect historic properties on Tribal lands; or,

(ii) An installation's undertakings may affect a historic property of traditional religious and cultural importance to the Tribe both on and off Tribal lands, and the THPO is the Tribe's designated representative for government-to-government consultation.

(2) When the THPO has participated as a consulting party, the Federally recognized Indian tribe which he or she represents is invited to sign the HPC.

(f) The Public.

(1) The Garrison commander shall seek and consider the views of the general public regarding the development, implementation, and recertification of the HPC in a manner consistent with section 3.5 and section 5.2 below.

Section 2.0: Applicability of Procedures

2.1 Installation Determination

(a) Garrison commanders complying with these procedures in lieu of 36 CFR part 800 shall document that determination in writing and provide notice to:

(1) The ACSIM, through the IMA, NGB or applicable MACOM;

(2) The SHPO;

(3) The Council;

(4) The head of any Federally recognized Indian Tribe or Native Hawaiian organization that attaches traditional religious and cultural importance to any historic property on the installation or affected by installation activities; and,

(5) The THPO for any Federally recognized Indian Tribe where historic properties on Tribal land will be affected by installation activities, including those properties of traditional religious and cultural importance to the Tribe.

(b) Garrison commanders continuing compliance with section 106 of the Act through 36 CFR part 800 may revisit their decision at any time thereafter and comply with these procedures by:

(1) Filing the notice required by section 2.1(a);

(2) Establishing the necessary program elements set forth in section 3.0; and,

(3) Completing the certification process established by section 4.0.

(c) When an Garrison commander operating under a certified HPC decides that the HPC is no longer appropriate, the Garrison commander may terminate the HPC by taking the following actions:

(1) Provide a notice of the Garrison commander's intent to terminate to all consulting parties 45 days prior to the effective date of termination. The notice of intent to terminate should provide a brief explanation for the decision to terminate;

(2) Invite the Council, ACSIM, and consulting parties to provide their views on the proposed termination during the 45-day notification period, and consider those views during the 45-day period. The Garrison commander will only furnish additional notice to consulting parties when a decision to continue operation under the HPC is made; and,

(3) At the end of the 45-day period, revert to compliance with section 106 through 36 CFR part 800.

(d) Garrison commanders who have terminated their HPC may implement these procedures at a later time through the certification process in section 4.3.

Section 3.0: Program Elements for Installations Participating in the Alternate Procedures

3.1 Designation of Cultural Resource Manager (CRM) and Coordinator for Native American Affairs

(a) Each Garrison commander shall designate an installation CRM to coordinate the section 106 responsibilities required under these procedures. The Garrison commander will ensure that the CRM has appropriate knowledge, skills, and professional training and education to carry out installation cultural resources management responsibilities. The CRM shall ensure that all historic properties technical work, including identification and evaluation of historic properties, assessment and treatment of effects, and preparation of HPCs, is conducted by individuals who meet the applicable professional standards defined in section 1.5.

(b) Each Garrison commander shall designate a Coordinator for Native

American Affairs if there are Native American issues. The Garrison commander will ensure that the Coordinator for Native American Affairs has appropriate knowledge, skills, and professional training and education to conduct installation consultation responsibilities with Federally recognized Indian Tribes and Native Hawaiian organizations. The Coordinator for Native American Affairs is responsible for facilitating the government-to-government relationship and, when designated, carry out staff-to-staff consultation responsibilities with Federally recognized Indian Tribes. The Coordinator for Native American Affairs will have access to the Garrison command staff in order to facilitate direct government-to-government consultation.

(c) If the Garrison commander deems it appropriate, he or she will fill the Coordinator for Native American Affairs position with an individual other than the CRM.

3.2 Professional Standards for the Development of the HPC

(a) Prior to developing the HPC, the Garrison commander shall ensure that:

(1) The CRM is either qualified under the standards set forth in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, and/or has access to technical experts who meet these standards to identify, evaluate, assess effects to, and treat historic properties, and for certification purposes in section 4.0 below; and,

(2) When such expertise is provided by Federally recognized Indian Tribes and Native Hawaiian organizations regarding identification of properties of traditional religious and cultural importance, they need not meet the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation.

(b) The Army is responsible for all findings and determinations made by external parties. When an external party prepares a document or study, the Army is responsible for its content and ensuring that it meets applicable standards and guidelines.

3.3 Identification of Consulting Parties for HPC Development

(a) Prior to the development of the HPC, the Garrison commander shall:

(1) Identify the SHPO(s) associated with the installation;

(2) Identify the THPO(s) when installation activities may affect historic properties on Tribal lands;

(3) Identify any Federally recognized Indian Tribes who may attach traditional religious and cultural importance to any historic properties on or off Tribal lands that may be affected by installation activities;

(4) Identify any Native Hawaiian organization that may attach traditional religious and cultural importance to any historic properties that may be affected by installation activities;

(5) In consultation with the SHPO(s), THPO(s), Federally recognized Indian Tribes, and Native Hawaiian organizations, identify other parties that are entitled, or should be invited to be consulting parties, including interested members of the public; and,

(6) Invite consulting parties to participate in the development of the installation's HPC.

(b) Garrison commanders should contact Federally recognized Indian Tribes early to establish a schedule and protocol for conducting consultation on a government-to-government basis for development of the HPC.

3.4 Consultation and Coordination for HPC Development

(a) Each Garrison commander shall develop a draft HPC in consultation with the parties identified in section 3.3, above, and, in coordination with appropriate installation staff (including natural resource management; facilities/housing management; range management, testing, training, and operations; master planning; public affairs office; the CRM, the Coordinator for Native American Affairs, and the Staff Judge Advocate).

(b) The Garrison commander shall ensure that all parties participating in consultation are provided adequate documentation early in the process regarding the installation's mission and operations, historic properties under its control, and the installation command structure. The documentation should be provided to consulting parties at least 30 days in advance of the initial consultation meeting to allow for a full review prior to participation in HPC development.

(c) HPC development begins with an initial consultation meeting between installation staff and consulting parties to identify issues that should be addressed in the HPC. Consultation and coordination shall continue throughout HPC development to ensure adequate opportunity for these parties to fully participate in development of the HPC. Installations are encouraged to invite consulting parties to participate in workgroups for drafting the HPC, but, at a minimum, must, provide opportunities for periodic review, and comment on draft work products.

3.5 HPC Development

The Garrison commander shall prepare an HPC to include the following:

(a) *Introduction:* This is a description of the installation's past and present mission(s) to include information that describes the types of activities associated with each mission that might have an effect on historic properties. The introduction shall also identify where the CRM position, and, when appropriate, the Coordinator for Native American Affairs position, is located within the installation's organizational structure.

(b) *Planning Level Survey (PLS):* The PLS, based on review of existing literature, records, and data, identifies the historic properties that are known, or may be expected to be present, on the installation. The PLS shall be updated as necessary to include additional information made available through the identification and evaluation of historic properties. The PLS shall, as appropriate:

(1) Provide locations of known historic properties, including historic properties having traditional religious and cultural importance to Federally recognized Indian Tribes or Native Hawaiian organizations, that have been listed in the National Register, or determined eligible for inclusion in the National Register, and those properties that require evaluation for determination of eligibility for the National Register;

(2) Be constructed in such a way that sensitive site information shall be excluded from the HPC, where distribution might jeopardize either the historic property or the confidentiality concerns of Federally recognized Indian Tribes and Native Hawaiian organizations;

(3) Establish an annual inventory schedule that identifies and prioritizes those areas of the installation that are programmed for undertakings in the next fiscal year to ensure that inventories and analyses of alternatives are completed early in the planning processes for these activities;

(4) Provide locations that have been previously inventoried where no historic properties have been identified;

(5) Provide information on current and projected future conditions of identified historic properties;

(6) Contain or provide reference to existing historic contexts, archeological sensitivity assessments, predictive models, and other relevant reports addressing historic properties on the installation;

(7) Provide a listing of any affiliated Federally recognized Indian Tribes or

Native Hawaiian organizations, other consulting parties and members of the public having an interest in the historic properties associated with the installation.

(c) *Categorized Undertakings:* This section shall include:

(1) A summary of the categories of undertakings that the installation anticipates conducting over the five-year planning period and should serve as the basis for development of standardized treatments, under section 3.5(e), where such activities have the potential to result in effects to historic properties. Categories of undertakings should include maintenance and repair, ground-disturbing activities, renovation, adaptive reuse, rehabilitation, substantial alteration, demolition, disposal through transfer, sale, or lease, and mothballing. This is not a list of individual undertakings;

(2) If available, a list of potential undertakings that the installation has programmed over the five-year planning period; and,

(3) Past and proposed undertakings that should be considered by consulting parties through the HPC's review and monitoring process required by section 3.5(f)(2).

(d) *Categorical Exclusions:* The HPC should include a list of undertakings that are categorically excluded from review. This list of categorical exclusions, developed in consultation with consulting parties, is supplemental to the Army-wide exempt undertakings listed in section 4.5. Final approval of an HPC's categorical exclusions, as provided for in 36 CFR § 800.14(c), will be made by the Council as part of the certification process; however, the Council may terminate a categorical exclusion at the Army's request or when the Council determines that the exclusion no longer meets the criteria of 36 CFR 800.14(c)(1). The Council shall notify the Army 30 days before termination becomes effective.

(e) *Management Goals and Practices:* The purpose of this section is to establish proactive consideration of preservation concerns carried out by management practices that are integrated into day-to-day installation activities to avoid adverse effects to historic properties. This section shall include:

(1) A description of the installation's desired future condition for historic properties over the course of the planning period;

(2) A description of goals for management and preservation of the installation's historic properties to be achieved over the course of the planning period; and,

(3) A list of management practices that can be employed to best meet the desired future condition and stated management goals. These management practices should:

(i) Be comparable with preservation standards and guidelines included in DA PAM 200–4 and the relevant Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation;

(ii) Focus on the major activities of an installation, including those identified in the Categorized Undertakings section of the HPC; and,

(iii) Focus on standardizing effective historic preservation practices and procedures for installation properties that, at a minimum, include preservation, adaptive reuse, rehabilitation standards, and, as appropriate, interpretation for historic properties.

(f) *Standard Operating Procedures (SOPs):* SOPs are critical to an installation's proper management of its undertakings and must be developed in close consultation with consulting parties, including SHPOs, THPOs, Federally recognized Indian Tribes, and Native Hawaiian organizations. SOPs shall be developed to provide consistent implementation of management goals, historic preservation standards, coordination, consultation, and mitigation procedures for historic properties that may be affected by installation undertakings. Where Federally recognized Indian Tribes attach traditional religious and cultural importance to historic properties, consultation with Tribes may take place for properties both on and off Tribal lands. These procedures shall be tailored for the particular conditions and specific requirements at an installation. At a minimum, HPCs shall include the following:

(1) *SOPs for Installation Decision Making Process:* These SOPs define the progressive steps which an installation shall take in its internal decision making process in order to manage its undertakings and their potential to affect historic properties. The goal of this SOP should be to avoid adverse effects in the first instance; to mitigate such effects where avoidance is not feasible; and to proceed with notification when adverse effects cannot be mitigated. In order to document this process, a Garrison commander should complete each step of the process before proceeding to the next.

(i) *Identifying Undertakings and Defining APEs:* This SOP shall provide for identifying undertakings and defining the APE for each undertaking.

(ii) *Identifying and Evaluating Historic Properties:* This SOP shall contain procedures for identifying historic properties within the APE, evaluating their eligibility for the National Register and assessing the effects on them, including those properties having traditional religious and cultural importance to Federally recognized Indian Tribes or Native Hawaiian organizations (recognizing that such properties may be eligible under any of the National Register criteria). This SOP should also contain a procedure for resolving any disputes over the eligibility of a property to the National Register. Any unresolved disputes concerning eligibility shall be forwarded to the Keeper of the National Register in accordance with 36 CFR part 63.

(iii) *Applying Best Management Practices:* This SOP shall provide for the consideration and application of historic preservation management practices established pursuant to section 3.5(e) to avoid adverse effects in the first instance and to meet identified HPC preservation goals. Avoidance of adverse effects would preclude the need to proceed with a more detailed alternatives review. Avoidance of adverse effects includes, for example, rehabilitating historic buildings following the Secretary of the Interior's Standards for the Treatment of Historic Properties (1995), and modifying project plans to physically avoid and protect archeological sites and historic properties of traditional religious and cultural importance to a Federally recognized Indian Tribe or Native Hawaiian organization.

(iv) *Alternatives Review:* This SOP shall provide a process for the review of project alternatives for undertakings where application of best management practices is not feasible or would not avoid adverse effects. Prior to applying mitigation measures to minimize unavoidable adverse effects to historic properties, application of this SOP is required. This SOP will:

(A) Conduct a review of project alternatives, using the NEPA process, when practical, to consider whether other feasible alternatives to avoid or reduce impacts to a historic property can be implemented. Alternatives should include the relocation or modification of project features, or the rehabilitation, renovation, adaptive reuse, transfer, or mothballing of historic buildings; and,

(B) Conduct an economic analysis for historic buildings proposed for demolition that addresses and compares the economic costs associated with alternatives, including the life-cycle

costs associated with rehabilitation and reuse; demolition and new construction; and mothballing and reuse.

(v) *Treatment of Adverse Effects:* This SOP shall provide for treating/mitigating adverse effects that cannot be avoided through the application of best management practices or implementation of a project alternative. This SOP should include HABS/HAER recordation, archeological data recovery, and mitigation procedures for transfer, sale or lease of historic properties out of Army ownership to a non-federal entity.

(vi) *Documenting Acceptable Loss:* This SOP shall provide for determinations to proceed with an undertaking having an adverse effect where the Garrison commander has determined that treatment/mitigation is not in the best public interest or is not financially or otherwise feasible. The Garrison commander's determination, including a discussion as to how the preceding steps in the decision making process were carried out and a rationale as to why mitigation measures will not be applied, shall be provided to consulting parties and the Council for a 30-day review, prior to implementing the undertaking. Upon receiving the written views of the Council, the Garrison commander must consider the Council's comments and provide written documentation of his or her decision to the Council and the consulting parties.

(2) *Review and Monitoring:* This SOP shall establish an annual review and monitoring coordination process among appropriate installation staff and consulting parties. Review and monitoring shall:

(i) Provide in advance, sufficient information to allow meaningful participation of consulting parties in the review and monitoring process;

(ii) Include review of the installation's programmed undertakings for the upcoming fiscal year to provide consulting parties an advanced opportunity to express their views on specific methods for identification, evaluation, and treatment of historic properties affected by such undertakings;

(iii) Include evaluation of past undertakings for the concluded fiscal year and the results of historic preservation efforts related to those undertakings;

(iv) Include evaluation of the effectiveness of the installation's HPC and the need to make amendments to it; and,

(v) Rely to the greatest extent practicable, on information generated by existing Army auditing, programming, and reporting systems.

(3) *Obtaining Technical Assistance in HPC Implementation:* Recognizing the importance of consulting parties' expertise in the management of historic properties, this SOP may be used to establish a process for the continued involvement of consulting parties and qualified organizations with a demonstrated interest in management of the installation's historic properties during HPC implementation through use of reimbursable arrangements.

(i) This SOP should establish reimbursable arrangements, such as cooperative agreements and procurement contracts, to obtain technical assistance from SHPOs, THPOs, Federally Recognized Indian Tribes, Native Hawaiian organizations, and other qualified organizations with a demonstrated interest in management of the installation's historic properties.

(ii) This SOP will ensure that the installation obtains necessary technical assistance in identification, evaluation, assessment of effects, and treatment of historic properties, using, to the maximum extent practicable, reimbursable arrangements such as procurement contracts and cooperative agreements with consulting parties and qualified organizations with a demonstrated interest in management of the installation's historic properties.

(iii) This SOP will recognize that:

(A) Federally recognized Indian Tribes are uniquely qualified to identify, evaluate, and treat historic properties to which they attach traditional religious and cultural importance on and off Tribal lands;

(B) Native Hawaiian organizations are uniquely qualified to identify, evaluate, and treat historic properties to which they attach traditional religious and cultural importance; and,

(C) SHPOs and THPOs possess indispensable professional expertise for identification and evaluation of historic properties as well as assessment and treatment of effects.

(iv) This SOP shall ensure that all actions to implement the HPC will be taken by individuals who meet professional standards under regulations established by the Secretary of Interior in accordance with section 112 (a)(1)(A) of the Act. The Army Agency Official shall ensure that professional standards, as defined in section 1.5 of these procedures, are met in the conduct of identification, evaluation, and assessment of effects and treatment of historic properties. When the Army requests assistance from Federally recognized Indian Tribes and Native Hawaiian organizations in the identification, evaluation, assessment of effects and treatment of historic properties of traditional religious and cultural importance, they need not meet the Secretary of Interior's Professional Qualifications Standards.

(4) *Consultation for Inadvertent Discovery and for Emergency Actions:* This SOP shall establish an expeditious consultation process between the installation and the consulting parties for emergency actions and for the inadvertent discovery of historic properties, including those of traditional religious and cultural importance to Federally recognized Indian Tribes or Native Hawaiian organizations. Consultation with Federally recognized Indian Tribes shall take place for such properties both on and off Tribal lands.

(5) *Categorical Exclusions:* This SOP shall provide for a process to determine when an approved categorical exclusion is applicable to an undertaking.

(6) *National Historic Landmarks:* This SOP shall contain provisions to give special consideration to installation undertakings that may directly and adversely affect NHLs by taking such planning and actions, where feasible, to minimize harm to the NHL. This SOP shall afford the Council and the National Park Service a reasonable opportunity to comment on the NEPA document(s) prepared for or associated with the undertaking prior to its approval.

(7) *Shared Public Data:* This SOP shall provide for the sharing of data between the installation and consulting parties and the public.

The procedure should, at a minimum, identify the categories of data to be shared, the format in which the data will be provided and the standards of data accuracy that will be met. To the greatest extent permitted by law, including section 304 of the Act and section 9 of ARPA, this SOP shall also ensure that shared data concerning the precise location and nature of historic properties, properties of traditional religious and cultural importance, and sacred sites identified pursuant to Executive Order 13007 are protected from public disclosure through NEPA or the Freedom of Information Act. Particular care should be taken to safeguard electronic data.

Section 4.0: Program Review and Certification

The Garrison commander shall develop a final HPC only after completing internal Army review and consultation with consulting parties and public participation in accordance with the procedures set forth in this section. The Garrison commander shall sign and implement the final HPC in recognition of its status as a section 106 legal

compliance document. Should the Garrison commander change during HPC implementation, the CRM or Native American Affairs Coordinator, shall advise the incoming Garrison commander of the HPC, its content, commitments and legal effect.

4.1 Army Program Review

(a) Garrison commanders complying with these procedures in lieu of 36 CFR part 800 shall forward a Draft HPC, meeting the requirements set forth in section 3.0, through the IMA, NGB or applicable MACOM to the ACSIM for review and comment through the following procedures.

(b) The Garrison commander shall forward the Draft HPC and supporting documentation that will include:

(1) The Draft HPC addressing all program elements set forth in section 3.0;

(2) The Draft NEPA document, generally an EA, developed to consider the environmental impacts of adopting and developing the Draft HPC;

(3) Confirmation that relevant installation level staff, including legal, operations and training, facilities and public works, have reviewed the Draft HPC;

(4) Summary of consultation with consulting parties and the results of such consultation, including the written comments, if any; and,

(5) An explanation of outstanding issues of concern when the Draft HPC does not reflect the mutual agreement of the installation and consulting parties.

(c) The IMA, NGB or applicable MACOM shall transmit the review package and any comments they may have to the ACSIM within 30 days.

(d) The ACSIM shall conduct Army staff review of the Draft HPC and supporting documentation and provide the Army staff review comments, or endorsement, of the draft HPC through the IMA, NGB or applicable MACOM to the Garrison commander regarding the Draft HPC's consistency with Army technical, legal and policy practices.

(e) The Garrison commander shall release the Draft HPC and NEPA document for review by the public and consulting parties in accordance with the procedures set forth in section 4.2 after receiving ACSIM endorsement. The Garrison commander shall withhold sensitive site data to the greatest extent permitted by ARPA and the Act.

4.2 Consulting Party and Public Review

(a) *Public Review.* After consultation with consulting parties in accordance with section 3.4, and internal Army program review pursuant to section 4.1, the installation shall release the Draft HPC and NEPA document, including, if appropriate, a draft Finding of No Significant Impact to the public for 30-day review and comment. The installation shall publicize the availability of these documents using appropriate public notification procedures established by the Army's published NEPA regulations, 32 CFR part 651. In addition, the installation shall forward copies of the Draft HPC and Draft NEPA document to any members of the public who have been identified as having an interest in the effects of Army activities on historic properties located on the installation or affected by installation activities, and local government officials.

(b) *Tribal, Native Hawaiian organization, SHPO, THPO and Council Review:*

(1) Concurrent with public review, the Garrison commander shall forward the Draft HPC and NEPA document to the following entities and invite their views:

(i) The Council;

(ii) The SHPO;

(iii) The THPO for any Federally recognized Indian Tribe where historic properties on Tribal lands will be affected by installation activities, including those properties of traditional religious and cultural importance to the Tribe;

(iv) The Tribal government and Native Hawaiian organization that attaches traditional religious and cultural importance to any historic property on the installation or affected by installation activities;

(v) any other consulting parties that have taken part in development of the HPC; and,

(2) Within 30 days of receipt of Draft HPC and NEPA document, consulting parties shall:

(i) Provide their written views to the installation;

(ii) Indicate whether or not they intend to be a signatory to the HPC; and,

(iii) Identify specific objections to the HPC.

(3) If any consulting party fails to provide written response within the 30-day review period, the Garrison commander may presume there is no objection by that consulting party to the Draft HPC.

(4) Garrison commanders shall consider the comments from the public and the written views and recommendations of the Council, SHPO, THPO, Tribal government or Native Hawaiian organization, and make adjustments to the Draft HPC and NEPA document, if appropriate.

(5) Where a SHPO, THPO, Tribal government or Native Hawaiian organization has objected in writing to the Draft HPC and refused to be a signatory, Garrison commanders shall consult with the objecting party to resolve the objection, prior to forwarding the Draft HPC and supporting documentation to the Council for review and certification.

4.3 Council Review and Certification

(a) After considering, and where appropriate, addressing the views of other consulting parties and the public, and consulting to resolve objections, the Garrison Commander shall sign the final HPC. The Garrison Commander shall then obtain the signature of consulting parties (other than those with outstanding objections), and forward the signed HPC to the Council with a request to review and certify the installation's HPC. The following supporting documentation will be included:

(1) Final NEPA documentation,

(2) Written views, if any, of consulting parties, including SHPO, THPO, Tribal governments or Native Hawaiian organizations,

(3) Summary of consultation with consulting parties, including SHPO, THPO, Tribal governments or Native Hawaiian organization(s),

(4) Any views expressed by the public; and,

(5) Where a consulting party has declined to participate as a signatory to the HPC, a summary of the party's objections and the installation's efforts to resolve the objections.

(b) The Council shall review the HPC to determine whether it meets the following certification criteria:

(1) Establish the Program Elements set forth in section 3.0;

(2) Include appropriate SOPs to ensure that the installation will effectively manage its historic properties, identify and consider the effects of its undertakings on historic properties, including those of traditional religious and cultural importance to a Federally recognized Indian Tribe or Native Hawaiian organization, apply appropriate treatment standards, and coordinate and consult with consulting parties;

(3) Demonstrate that it was developed in consultation with the SHPO, THPO, Tribal governments or Native Hawaiian organizations that attach traditional religious and cultural importance to historic properties on the installation or affected by installation activities;

(4) Demonstrate that the public participated in development and/or review;

(5) Establish procedures for coordination to facilitate review and monitoring;

(6) Establish procedures for obtaining Council and National Park Service comments through the NEPA process where an undertaking will have a direct and adverse effect on an NHL; and,

(7) For installations with identified NHLs, establish procedures, where feasible, for minimizing the effects of undertakings that may have a direct and adverse effect on an NHL.

(c) Within 30 days of its receipt of the HPC and supporting documentation, the Council shall apply the certification criteria set forth in section 4.3(b)(1)–(7), and shall:

(1) Determine that the installation's HPC meets the criteria and sign the HPC, certifying the installation to comply with section 106 of the Act through implementation of the HPC. Within 30 days of receiving the Council's certification, the Garrison commander shall provide signed copies of the certified HPC to consulting parties; or,

(2) Determine that the installation historic preservation program shall meet the certification criteria with minor adjustments; and,

(i) Provide views to the installation with suggested changes, and,

(ii) Sign the HPC, subject to the installation's incorporation of changes, certifying the installation to comply with section 106 of the Act through implementation of the HPC. Within 60 days of receipt of the Council's certification, the Garrison commander, unless an extension period is agreed to, shall make the recommended changes and shall provide copies of the revised HPC to the Council, and the consulting parties. If the Council does not receive the installation changes within 60 days or the extension period, the Council shall notify the Garrison commander and consulting parties that the HPC has failed to meet certification criteria, and the installation shall follow section 4.3(d), below.

(3) Determine that the installation has failed to meet one or more of the certification criteria set forth in section 4.3(b)(1)–(7), and:

(i) Provide the installation with formal written views that identify the specific criterion and related deficiency; and,

(ii) Make specific recommendations to the installation for addressing the identified deficiency.

(d) Where the Council has determined that the installation's HPC has failed to meet the certification criteria, the Garrison commander shall:

(1) Address the identified deficiency and resubmit the HPC and supporting documentation to the Council for certification in accordance with section 4.3(a), in which case the Council shall conduct the review and provide a certification determination pursuant to section 4.3(b)–(c); or,

(2) Object, in writing, to the Council's recommendations and consult with the Council to resolve the objections.

(i) If, after good faith consultation, the Council and Garrison commander agree that the objection(s) cannot be resolved, the installation shall notify the ACSIM through the IMA, NGB or applicable MACOM.

(ii) If, 30 days after ACSIM notification, objections remain unresolved, consultation under these procedures shall terminate and the Garrison commander will notify consulting parties and continue to operate under 36 CFR part 800.

(3) The Garrison commander may resubmit his request for certification and reinitiate consultation at any time after termination.

4.4 Effect of Certification

(a) Installations with a certified HPC shall operate under the procedures set forth herein as implemented by that HPC. The provisions of the certified HPC shall substitute for the requirements of 36 CFR part 800 for a period of five years from the date of certification.

(b) Installations applying these procedures that have not met certification requirements shall review undertakings in accordance with the procedures set forth in 36 CFR part 800.

(c) Installations shall implement treatment and mitigation commitments made in existing project-specific Memoranda of Agreement (MOAs) and Programmatic Agreements (PAs). Upon completion of pre-existing mitigation and treatment requirements, such agreements shall terminate. Requirements of other installation level Programmatic Agreements shall terminate upon certification. However, successful procedures in such agreements for the identification, evaluation, assessment of effects and treatment of historic properties should be considered during consultation, and if appropriate, integrated in the SOPs.

4.5 Exempt Undertakings

(a) The following categories of undertakings are exempt from further review by an installation operating under a certified HPC:

(1) Undertakings addressed through a fully executed nationwide Programmatic Agreement or other Program Alternative executed in accordance with 36 CFR part 800.14.

(2) Undertakings categorically excluded by an installation's HPC pursuant to section 3.5(d).

(3) Undertakings where there is an imminent threat to human health and safety. Such actions include:

(i) In-place disposal of unexploded ordnance;

(ii) Disposal of ordnance in existing open burning/open detonation units;

(iii) Emergency response to releases of hazardous substances, pollutants and contaminants; and,

(iv) Military training and testing activities in existing designated surface danger zones (*e.g.* dudded impact areas).

(b) Where a Federally recognized Indian Tribe has entered into an agreement with the Council to substitute Tribal historic preservation regulations for the Council's regulations under section 101(d)(5) of the Act, the Army shall follow those Tribal historic preservation regulations for undertakings occurring on or affecting historic properties on Tribal lands.

(c) In instances where another Federal agency is involved with the Army in an undertaking, the Army and the other agency may mutually agree that the other agency be designated as lead Federal agency. In such cases, undertakings will be reviewed in accordance with 36 CFR part 800.

Section 5.0: Amendment and Recertification

5.1 Plan Amendment

(a) At any time after obtaining Council certification, a consulting party may identify changed circumstances and propose an HPC amendment to the Garrison commander.

(b) If the Garrison commander determines that an amendment to an HPC may be necessary, the installation shall continue to review undertakings and treat adverse effects in accordance with the established HPC, unless he/she determines that the HPC is insufficient to meet its responsibilities under section 106 of the Act. If the Garrison commander determines that the HPC is no longer sufficient to meet those responsibilities, it shall review its undertakings in accordance with 36 CFR part 800 until the proposed HPC amendment is completed.

(c) Where the Garrison commander determines that an amendment proposed by a consulting party is not necessary, and agreement cannot be reached between the Garrison commander and the consulting party to amend the HPC, the consulting party may request Council review under section 7.2.

(d) *Major Amendments:* Any proposal to alter, delete, or add to an HPC's list of categorical exclusions, best management practices, or established standard operating procedures shall be considered a Major Amendment to the HPC.

(1) The Garrison commander shall:

(i) Forward the proposed amendment to consulting parties;

(ii) Consult with such parties and invite them to be signatories on the HPC Major Amendment; and,

(iii) Seek and consider views of the public through the NEPA process, if applicable.

(2) Within 45 days of its receipt of the proposed HPC Major Amendment, each consulting party shall:

(i) Provide written comments to the installation;

(ii) Indicate whether it intends to be a signatory to the proposed HPC Major Amendment; and, if not,

(iii) Provide written objections to both the Garrison commander and the Council.

(3) When a consulting party fails to provide written response within the 45-day review period, the Garrison commander may presume that there is no objection to the proposed HPC Major Amendment by that consulting party.

(4) If all consulting parties and the Garrison commander concur with the proposed HPC Major Amendment, the Garrison commander shall obtain the consulting parties signatures on the final HPC major amendment and forward it to the Council for review, approval, and signature. If the Council does not respond within 30 days of its receipt of the amendment, then the amendment shall be considered final. The Garrison commander shall send copies of the final signed HPC Major Amendment to consulting parties and the ACSIM through the IMA, NGB or applicable MACOM.

(5) If all consulting parties do not concur with the proposed HPC Major Amendment and/or the Council objects within 30 days of the proposed amendment, the Council shall provide its written views and recommendations on the proposed HPC Major Amendment to the Garrison commander;

(i) If the Garrison commander considers the Council's views and implements the Council's recommendations, then the HPC Major Amendment shall be considered final.

(ii) If the Garrison commander objects to the Council's recommendations, the Garrison commander shall consult with the Council to resolve the objections.

(A) If the Council and the Garrison commander agree that the objection cannot be resolved, installation shall notify the ACSIM through the IMA, NGB or applicable MACOM.

(B) If, 30 days after ACSIM notification, objections remain unresolved, consultation shall terminate and the installation shall either continue implementation of its certified HPC without the amendment or, where that is not feasible, comply with 36 CFR part 800. The Garrison commander shall notify consulting parties of the final decision.

(iii) The Garrison commander may reinitiate consultation on the proposed amendment to the HPC any time after termination.

(e) *Minor Amendments:* When circumstances at an installation change, requiring Minor Amendment(s) to an administrative provision in the installation's HPC, such as identification of the CRM, Coordinator for Native American Affairs, changes to the planning level survey, changes to the list of categorized undertakings, and technical editorial changes, the Garrison commander shall:

(1) Amend the HPC without further consultation or coordination; and,

(2) Provide a Notice of Change to consulting parties and the Council.

5.2 Recertification

(a) No later than six months prior to expiration of the five-year term of certification, the Garrison commander shall initiate the process for obtaining renewed certification through the procedures set forth in sections 3.0 and 4.0 of these procedures.

(b) The installation shall continue to operate under its certified HPC during the recertification process unless the five-year term of the HPC has expired. Where the five-year term of the HPC has expired, the Garrison commander shall:

(1) Continue to operate under the certified HPC for a period of time to be determined by the Council, in consultation with the Garrison commander; and,

(2) Inform consulting parties of the time extension, and work with them towards completing the recertification process; or,

(3) Inform consulting parties and review individual undertakings in accordance with 36 CFR part 800 until recertification of the HPC is completed.

Section 6.0: Administrative Remedies

6.1 Evaluation of Council Determinations

(a) Within 30 days of the Council's final determination to certify or recertify an installation to operate under its HPC, or approve a Major Amendment, a consulting party may object in writing to the Council's determination. The objection must:

(1) Be forwarded to the Council, and the Garrison commander;

(2) Be specifically related to a deficiency in:

(i) Consultation with the consulting party; and/or,

(ii) Consideration of historic properties of importance to that objecting party.

(b) The Council shall review the objection, obtain the installation's views, and within 30 days provide the Council's written determination to both the objecting party and the Garrison commander.

(c) The Council's written determination shall either:

(1) Validate the Council's previous determination to certify or recertify the HPC, or to approve a Major Amendment;

(2) Allow the installation to continue implementation while resolving objections; or,

(3) Revoke the previous determination and require the installation to review its undertakings in accordance with 36 CFR part 800.

6.2 Evaluation of HPC Implementation

(a) Any time subsequent to Council certification or recertification, if a consulting party believes that an installation has failed to implement its HPC, the consulting party shall first notify the Garrison commander, in writing, of its objection. The consulting party must provide information and documentation sufficient to set forth the basis for its objection. The Garrison commander and consulting party shall attempt to resolve the objection informally before proceeding with the formal procedures set forth below.

(b) If a consulting party has raised an objection with the Garrison commander and the objection has not been resolved informally, the objecting party may elevate its objection to the Council, in writing. The written objection must:

(1) Be forwarded to the Council and the Garrison commander;

(2) Be specifically related to an installation's failure to implement an identified SOP in the HPC; and,

(3) Describe the objecting party's efforts to resolve the objection informally at the installation level.

(c) Where the consulting party has objected to a specific undertaking, the Garrison commander shall, during the 15-day Council review period set forth below, defer that discrete portion of the undertaking which may cause adverse effects to historic properties. This deferral provision will not apply where

the activity at issue is an exempt undertaking under section 4.5 or where the adverse effects have been documented as acceptable loss under an installation's HPC implementing section 3.5(f)(1)(vi) of these procedures.

(d) The Council, within 15 days of receiving the written objection of a consulting party, shall provide a written response to the consulting party and the Garrison commander, expressing its views, and, if appropriate, making specific recommendations for resolution of the consulting party's objections.

(e) If the Council does not provide its written views within the 15-day review period, the Garrison commander shall assume that there is no Council objection and proceed with the undertaking.

(f) If the Council does provide its written views within the 15 day review period, the Garrison commander shall document Army consideration of the Council's views, provide copies of the documentation to the Council and the objecting consulting party, and proceed with the undertaking.

(g) The Council may also object to an installation's implementation of its HPC, in which case the Council will provide its written views and specific recommendations for resolution to the Garrison commander for his or her consideration. The Garrison commander shall document Army consideration of the Council's views, and provide copies of the documentation to the Council and the consulting parties.

Section 7.0: Council Review of Army Section 106 Compliance

7.1 Council Review of Army Alternate Procedures

(a) The Council may periodically evaluate the effectiveness of these procedures in meeting the mandates, goals and objectives of section 106 of the Act and make recommendations to the Army to improve the efficiency and effectiveness of its compliance with section 106, under these procedures.

(b) As required by section 203 of the Act, the Army shall assist the Council in their evaluation by providing requested documentation on Army policies, procedures, and actions taken to comply with section 106 of the Act.

(c) The Council shall make the results of any evaluation conducted under this section available for public inspection.

(d) Upon request by Headquarters, Department of the Army, the Council may adopt technical and/or administrative amendments to the Army Alternate Procedures. Such amendments will take effect upon approval by the Council's Chairman. The Council shall publish in the **Federal Register** a notice of such amendment within 30 days after their approval. Technical and administrative amendments shall not modify the role of consulting parties in the Army Alternate Procedures.

7.2 Council Review of Installation Compliance

(a) The Council may review an installation's compliance with its HPC only where a documented pattern of failure to implement the installation's HPC is evident. The Council's review may be undertaken on its own initiative or at the request of a consulting party based in part on the objections rising from evaluation under section 6.2. Based on its review, the Council shall:

(1) Determine that the installation is substantially complying with the HPC and make recommendations for program improvements; or,

(2) Initiate consultation with the Garrison commander, and recommend a course of action to ensure installation implementation of its HPC.

(3) Provide a copy of any written recommendations to consulting parties.

(b) The Garrison commander, after receiving Council recommendations, shall either:

(1) Conclude consultation and implement its HPC in accordance with Council recommendations; or, (2) Obtain ACSIM endorsement to revert to operation under 36 CFR part 800 and provide notice to consulting parties and the Council.

Appendix A: Acronyms

Acronyms Used in Army Alternate Procedures for Historic Properties

AAP Army Alternate Procedures
ACSIM Assistant Chief of Staff for Installation Management
AR 200–2 Army Regulation 200–2: Environmental Effects of Army Actions
Act The National Historic Preservation Act
APE Area of Potential Effects
ARPA The Archeological Resources Protection Act
CRM Cultural Resources Manager
DA PAM 200–4 Department of the Army Pamphlet 200–4: Cultural Resources Management
DEP Director of Environmental Programs
EA Environmental Assessment
EIS Environmental Impact Statement
FPO Federal Preservation Officer
HPC Historic Properties Component (the section 106 portion of an ICRMP)
HQDA Headquarters, Department of the Army
ICRMP Integrated Cultural Resources Management Plan
IMA Installation Management Agency
MACOM Major Command
MOA Memorandum of Agreement
NAGPRA The Native American Graves Protection and Repatriation Act
NEPA The National Environmental Policy Act
NGB National Guard Bureau
NHL National Historic Landmark
NHPA The National Historic Preservation Act
PA Programmatic Agreement
PLS Planning Level Survey
SHPO State Historic Preservation Officer
SOP Standard Operating Procedure
THPO Tribal Historic Preservation Officer

Authority: 16 U.S.C. 470s; 36 CFR 800.14(a).

Dated: April 13, 2004.

John M. Fowler,

Executive Director.

[FR Doc. 04–8681 Filed 4–15–04; 8:45 am]

BILLING CODE 4310–10–P

DEPARTMENT OF AGRICULTURE

Office of the Secretary

Notice of the Research, Education, and Economics Task Force Meeting

AGENCY: Research, Education, and Economics, USDA.

ACTION: Notice of meeting.

SUMMARY: In accordance with the Federal Advisory Committee Act, 5 U.S.C. App., the United States Department of Agriculture announces a meeting of the Research, Education, and Economics Task Force.

DATES: The Research, Education, and Economics Task Force will meet on April 20, 2004. The public may file written comments before or up to two weeks after the meeting with the contact person.

ADDRESSES: On April 20th, the meeting will take place at the Lowes L'Enfant Plaza Hotel, 480 L'Enfant Plaza, SW., Washington, DC, 20024.

Written comments from the public may be sent to the Contact Person identified in this notice at: The Research, Education, and Economics Task Force; Office of the Under Secretary, Room 214–W, Jamie L. Whitten Building, United States Department of Agriculture, 1400 Independence Ave., SW., Washington, DC 20250.

FOR FURTHER INFORMATION CONTACT: Kathryn Boots, Executive Director, Research, Education, and Economics Task Force; telephone: (202) 690–0826; fax: (202) 690–2842; or e-mail: *katie.boots@usda.gov*.

SUPPLEMENTARY INFORMATION: On Tuesday, April 20th, the Research, Education, and Economics Task Force will hold a general meeting at the Lowes L'Enfant Plaza Hotel. The Task Force

Advisory Council on Historic Preservation
Section 106 Archaeology Guidance on Alternative Mitigation

Section 106 Archaeology Guidance

ernative” or “creative” mitigation?

These terms refer to alternatives to archaeological data recovery as mitigation for an undertaking's adverse effects. Such approaches can either be implemented alone or as part of a broader m tigat on package. Examples of such alternatives may include:

- preserving selected eligible archaeological sites and incorporating them into her tage tourism plans while allowing others to be lost;
- burying s tes under fill or incorporating them into the undertaking;
- using resources to develop syntheses of existing information on a region or area instead of, or in addition to, using them on data recovery;
- use of barriers to route traffic away from eligible archaeological sites;
- using resources to develop virtual or Web-based reports or educational media that otherwise would not be produced.

Another example of these alternatives is archaeolog cal "mitigat on banking." This term refers to the acquisition and preservat on of archaeological sites away from the project area in return for doing little or no direct m tigation on sites within the area of potential effects.

This concept of "alternative" or "creative" m tigat on is consistent with the defin tion of "mitigation" as used in the National Environmental Policy Act regulations of the Council on Environmental Quality [Section 1508.20(c)-(e)--see CEQ - Regulat ons for Implementing NEPA], where t includes:

> (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
>
> (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
>
> (e) Compensating for the impact by replacing or providing substitute resources or environments (i.e., "off-site m tigat on")

Submit Comments

Posted on *Mon, 06/18/2007 - 22:56*
Reaching agreement on appropriate treatment

APPENDIX D

Programmatic Agreements

Fort A.P. Hill BRAC Programmatic Agreement

PROGRAMMATIC AGREEMENT
AMONG
THE UNITED STATES ARMY,
THE VIRGINIA STATE HISTORIC PRESERVATION OFFICER,
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING IMPLEMENTATION OF PORTIONS OF
THE BRAC REALIGNMENT OF FORT LEE, VIRGINIA
RELATIVE TO FORT A.P. HILL, VIRGINIA

WHEREAS, the United States Army (Army) is responsible for implementation of applicable provisions of the Defense Base Closure and Realignment Act of 1990 (Public Law [PL] 101-510, 10 U.S.C. Section 2687) (BRAC) as amended by the National Defense Authorization Act for Fiscal Year 2002 (PL 107, Sections 3001-3006), and is proceeding with the realignment of Fort Lee, Prince George County, Virginia; and

WHEREAS, Fort Lee has insufficient land and space available to conduct Warrior Training involving heavy weapons and explosives; and

WHEREAS, appropriate Warrior Training facilities for units realigning at Fort Lee will be developed at Fort A.P. Hill, Caroline County, Virginia; and

WHEREAS, the Army has determined that the development of training facilities at Fort A.P. Hill pursuant to BRAC constitutes an undertaking (Undertaking) that may have an effect upon historic properties that are listed in, or are eligible for inclusion in, the National Register of Historic Places (National Register), and has consulted with the Virginia State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. Section 470[f]); and

WHEREAS, the area of potential effect (APE) for the Undertaking at Fort A.P. Hill consists of eight Forward Operating Base (FOB) locations and one Explosive Ordnance Disposal (EOD) site (Attachment A); and

WHEREAS, the Army has completed investigations pursuant to 36 CFR 800.4(a) through (c) of the APE (Attachments B and C), and has identified eleven (11) historic properties (Attachment D) within the APE; and

WHEREAS, the Army has determined and the SHPO concurs that the proposed Undertaking will have adverse effects on historic properties at Fort A.P. Hill and as these effects are likely to be similar or repetitive in nature, the Army, pursuant to 36 CFR 800.14(b)(1), has chosen to execute a Programmatic Agreement (Agreement) that establishes an alternative approach to mitigation, which focuses on off-site conservation; and

WHEREAS, the Army has invited the ACHP to consult on this Agreement and the ACHP has chosen to participate; and

WHEREAS, the Army has invited the Absentee-Shawnee of Oklahoma, Cayuga Nation of New York, Cherokee Nation of Oklahoma, Delaware Nation, Eastern Shawnee Tribe of Oklahoma, Oneida Nation of Wisconsin, Onondaga Nation, Seneca Nation of Indians, Shawnee Tribe, Tonawanda Seneca Nation, and Tuscarora Nation to consult on this Agreement and these Tribes did not respond to the invitation; and

WHEREAS, the Army has invited the Eastern Band of Cherokee Indians, Oneida Indian Nation of New York, Seneca-Cayuga Tribe of Oklahoma, and St. Regis Mohawk Tribe to consult on this Agreement and these Tribes have declined to participate; and

WHEREAS, the Army has invited the United Keetoowah Band of Cherokee Indians in Oklahoma (a Federally-recognized Tribe) to consult on this Agreement and the Band has (1) indicated that there are no known historic properties of traditional religious and cultural significance to the Band within the APE and (2) asked to be a concurring party to ensure that the Agreement includes appropriate language relative to the Army's Federal obligations to Indian Tribes; and

WHEREAS, the Army has invited the Virginia Council on Indians (VCI) to consult on this Agreement as a concurring party, and the VCI has chosen to participate, and

WHEREAS, the Army has invited the Rappahannock Tribe (Rappahannock) to consult on this Agreement as a concurring party, and the Rappahannock have chosen to participate, and

WHEREAS, the Army has invited the Archeological Society of Virginia, National Park Service Fredericksburg & Spotsylvania National Military Park, Civil War Preservation Trust, Council of Virginia Archaeologists, and the Caroline County Historical Society to consult on this Agreement as concurring parties, and they have chosen to participate; and

WHEREAS, the Army has conducted a review process, in accordance with the National Environmental Policy Act of 1969 (as amended) and the Army's implementing regulations "Environmental Analysis of Army Actions" (32 CFR 651), for the development of an Environmental Impact Statement (EIS), and solicited public input on the review of potential effects the proposed Undertaking may have on historic properties in both the EIS and this Agreement during that process; and

WHEREAS, pursuant to the goals of the Army Compatible Use Buffer Partnership (ACUB), the consulting parties agree to consider options for alternate mitigation approaches to achieve a better preservation outcome than only data recovery when archaeological sites are affected; and

WHEREAS, the Army has developed the Fort A.P. Hill Oral History Project, which has been established to record the history of Fort A.P. Hill lands through the voices of living persons who resided or worked in the area prior to Army acquisition in the 1940s.

NOW, THEREFORE, the Army, the SHPO, and the ACHP agree that upon the Army's decision to proceed with the Undertaking, the Army shall ensure that the following stipulations are implemented in order to take into account the effects of the Undertaking on historic properties, and that these stipulations shall govern the Undertaking and all of its parts until this Agreement expires or is terminated:

Stipulations

The Army shall ensure that the following measures are carried out.

I. Personnel

A. Prior to the execution of this Agreement, the Army shall designate a Cultural Resource Manager (CRM) to have responsibility for administering the process outlined in this Agreement. The CRM shall meet, or have access to professionals who meet, the *Secretary of the Interior's Professional Qualifications Standards* (48 Federal Register 44738-44739) for an archeologist. The garrison commander shall ensure that the CRM participates in all installation-level planning for this Undertaking.

B. All archaeological investigations carried out pursuant to this Agreement shall be conducted by or under the direct supervision of an individual or individuals who meet, at a minimum, the *Secretary of the Interior's Professional Qualifications Standards* (48 FR 44738-44739) for an archeologist.

II. Identification of Historic Properties

The Army has carried out identification and evaluation investigations within the APE and has determined in consultation with the SHPO that nine archaeological sites (44CE0110, 44CE0325, 44CE0386, 44CE0402, 44CE0482, 44CE0483, 44CE0488, 44CE0489, and 44CE0490) of the 48 sites identified (see Attachment C) are eligible for inclusion in the National Register. As evaluations have not been completed at Sites 44CE0478 and 44CE0505, the Army has chosen to treat these two sites as eligible for the purposes of a program alternative (ELPA). Attachment D presents the list of eleven (11) eligible archaeological sites.

III. Mitigation of Adverse Effects to Historic Properties in the APE

The Army shall mitigate adverse effects to historic properties located within the APE through a combination of mitigation measures that includes an alternative approach to mitigation that focuses on the preservation of more-significant historic properties located outside of the boundaries of Fort A.P. Hill and reduces the effort expended on the historic properties identified within the APE on Fort A.P. Hill (see Attachment D). The Army shall implement the following measures to mitigate the potential adverse effects to all historic properties within the APE.

A. Execution of a Conservation Easement

The Army, under authority of 10 U.S.C. 2684a, as implemented by the Army Compatible Use Buffer (ACUB) Program shall acquire a conservation easement (Easement) for approximately five-hundred (500) acres depicted at Attachment E on the Camden Farm, a National Historic Landmark (NHL) located outside of the boundaries of Fort A.P. Hill. The Easement shall be offered to the Virginia Outdoors Foundation (VOF) and the Virginia Board of Historic Resources (VBHR). Attachment F provides a list of previously recorded archeological sites located within the Easement. Attachment G depicts the approximate location of the 55-acre “no development” parcel. The Easement shall be executed within twelve (12) months of the signing of this Agreement. The executed Easement shall become an attachment to this Agreement. If the Army is unable to acquire the Easement, the signatories shall consult to determine appropriate actions to resolve adverse effects in accordance with 36 CFR 800.6(b)(2), and, in the event further consultation is unsuccessful, 36 CFR 800.7. With respect to the Easement, the Army shall provide the following:

1. The Army shall ensure that the Easement includes a provision requiring the easement holder(s) to complete an initial condition assessment as part of the baseline documentation to determine the current state of the archaeological sites within the Easement, and thereafter requiring the easement holder(s) to complete an annual condition assessment. Copies of the initial condition assessment and annual condition assessments shall be provided to the landowner and the Army. Any damage shall be reported immediately to the easement holder(s), the landowner, and the Army. The Army shall further ensure that the Easement includes a provision requiring that the landowner, the Easement holder(s), and the Army shall consult to remedy any such damage to the archaeological resources within the Easement.
2. No ground-disturbing activities, other than no-till agricultural practices as defined by the Virginia Department of Conservation and Recreation Agricultural Best Management Practices and archeological investigations approved by the easement holder(s), shall be knowingly undertaken within the approximately 55-acre parcel which includes sites 44CE0003, 44CE0004, 44CE0013, 44CE0014, 44CE0015, 44CE0020, and 44CE0139 through 44CE0151 (see Attachment G).
3. All proposed archaeological investigations within the Easement must obtain prior approval from the easement holder(s) and must be conducted with the permission of the

landowner and under the direct supervision of a professional archaeologist meeting the *Secretary of the Interior's Professional Qualifications Standards* (48 FR 44738-44739).

4. Location and siting for new construction on the remainder of the Easement shall require review and approval by the easement holder(s) and an authorized representative of the Army.
5. Access to the Easement will be provided to the easement holder(s), the easement holder's(s') representative(s), and the Army or the Army's representative(s) for the purpose of archeological investigations prior to the expansion of the existing quarry or new construction in the Easement.
6. The Army shall provide the draft Easement to the consulting parties for review and comment. The Army shall address all comments received from the consulting parties within the allotted comment period provided for in Stipulation IV.C.
7. The Army shall provide Phase I archeological survey in association with the exercise of reserved rights within the Easement. This survey shall not exceed one (1) percent of the total area of the Easement and shall be conducted at the request of the easement holder(s). The Army shall initiate the survey within ninety (90) days of the request.
8. The easement holder(s) shall notify the Army and request comment prior to any planned archaeological investigation, research, or data recovery activities that the easement holder(s) has/have approved to be performed within the Easement. The easement holder(s) shall take into consideration all comments received from the Army within the allotted comment period provided for in Stipulation IV.C.

B. Mitigation Actions on Fort A. P. Hill

1. The Army shall document six Civil War-era historic properties within the APE on Fort A.P. Hill (Sites 44CE0325, 44CE0386, 44CE0402, 44CE0489, 44CE0490, and 44CE0505) through still photography and video recordings. No additional excavations will be conducted at these sites. The Army shall prepare a technical report that presents the results of current and previous investigations at Civil War-era resources at Fort A.P. Hill, with emphasis on the 1862-1863 winter encampment, within twelve (12) months of execution of this Agreement and made available to interested parties upon request. Consulting parties will be invited to participate in the documentation of the sites through the mapping, global positioning system recordation, drawing, and photographing of cultural features. For each site, a video presentation that incorporates the field documentation will be prepared and made available to the public on digital video disc (DVD) or other appropriate media, on request. All reports and video presentations will be presented to the consulting parties for review and comment prior to finalization. Additional site specific stipulations include:
   a. Site 44CE0402 (Civil War Camp with Cemetery Component) –If plans related to this Undertaking are developed requiring the cemetery to be physically disturbed, the Army shall develop a site mitigation plan in consultation with the SHPO and other consulting parties to ensure the proper treatment of human remains.
   b. Site 44CE0505 (Civil War Trench) – The Army shall include in the Civil War-era resources technical report the results of the additional field investigations, completed in February 2008, on which the Army has determined that the site is eligible for inclusion in the National Register.
2. The Army shall further document four historic domestic sites (44CE0478, 44CE0482, 44CE0483, and 44CE0488) within the APE on Fort A.P. Hill through public outreach archeology projects and through incorporation into the Fort A.P. Hill Oral History Project, within twelve (12) months of execution of this Agreement. The Fort A.P. Hill Oral History Project has identified living descendants of the former residents of Site

44CE0478, and continues to seek information from descendants of former landowners and residents relative to sites at the installation. Prior to field investigations, the Army shall invite consulting parties to participate in the documentation of these sites, and in other field investigations that may be conducted. The Army shall conduct limited archeological investigations at these four sites, focusing on hands-on archeology projects that involve descendants of former landowners and consulting parties. Limited excavations (e.g., judgmental shovel tests or 1x1-meter test units) may be conducted at the locations of features identified by participants in the public program to answer specific research questions developed by those parties. For each site, the Army shall not be obligated to excavate more than eight (8) shovel tests and two (2) 11-meter test units. The purpose of these investigations is to gather new information and allow former residents and their descendants a final opportunity to visit, and provide additional historical information relative to these homesites while these areas are still available for public access. The Army shall document these investigations through still photography and video recordings, as well as technical and public (non-technical) reports within six months of completion of this investigation. For each site, the Army shall prepare a video presentation that incorporates the field investigations and documentation and make those available to the public on DVD or other appropriate media, on request and through distribution to local historical societies and libraries. All reports and video presentations will be presented to the consulting parties for review and comment prior to finalization. Additional site-specific stipulations include: Site 44CE0478 (Nineteenth-/Twentieth-Century House Site with Cemetery Component) – Based on the information currently available, the SHPO does not consider Site 44CE0478 to meet the criteria for inclusion in the National Register. However, to determine if the site contains a cemetery component that would warrant reconsideration of the site's eligibility, the Army shall conduct further investigations at the site. Field investigations will focus on the identification of a potential unmarked cemetery component referenced in a 1937 Works Progress Administration Historical Inventory report, and will involve consulting parties and descendants of former landowners. If it is determined that the site includes a cemetery component, and plans related to this Undertaking are developed requiring the cemetery to be physically disturbed, a site mitigation plan will be developed in consultation with the SHPO and other consulting parties to ensure the proper treatment of human remains.

3. In the event that the Army determines Site 44CE0110 will be adversely affected by this Undertaking, the Army, in consultation with the SHPO, shall complete the following excavation activities on that site. Site 44CE0110 has the potential to contain eighteenth-century components associated with the plantation house of Major William Woodford (ca. 1730) and his son General William Woodford, Jr. Prior to field investigations, the Army shall invite consulting parties and members of the interested public to participate in any investigations that may be conducted. The Army shall conduct field investigations to include hands-on archeological excavations and participation by consulting parties and descendant communities. Excavations would be conducted in areas of high artifact concentration and at the former locations of structures associated with the eighteenth-century occupation of the site. The Army shall not be obligated to excavate more than thirty (30) shovel tests and ten (10) 1x1-meter test units. The Army shall incorporate evidence of more recent (i.e., late nineteenth- through twentieth-century) occupations at the site into the Fort A.P. Hill Oral History Project. The Army shall report the results of the investigations in a technical report and through video and print media, and shall make these interpretive products available to the public on request. All reports and video presentations will be presented to the consulting parties for review and comment prior to finalization.

C. Curation. All archaeological materials and appropriate field and research notes, maps, drawings, and photographic records collected on Fort A. P. Hill as part of this Undertaking (with the exception of human skeletal remains and/or associated funerary objects) will be deposited for permanent curation with the Fort Lee Regional Archaeological Curation Facility, in accordance with the requirements in 36 CFR 79, Curation of Federally Owned and Administered Archeological Collections. All such items will be made available to educational institutions and individual scholars for appropriate exhibit and/or research under the operating policies of the Fort Lee Regional Archaeological Curation Facility.

IV. Review of Documentation

A. All archaeological investigations resulting from this Agreement shall be consistent with the *Secretary of the Interior's Standards and Guidelines for Archeological Documentation (48 FR 44734-44737)* and the SHPO's *Guidelines for Conducting Cultural Resource Survey in Virginia: Additional Guidance for the Implementation of the Federal Standards Entitled Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (48 FR 44742, September 29, 1983)* (1999, rev. 2003), and shall take into account the ACHP's publications, *Recommended Approach for Consultation on Recovery of Significant Information from Archeological Sites* (1999) and *Section 106 Archaeology Guidance* (June 1997).

B. The Army shall submit a draft of all final technical reports and other media to the SHPO and other consulting parties for review and comment. The Army shall ensure that all comments received within thirty (30) days of report receipt shall be considered in the final technical report. Two (2) copies of all final reports, bound and on acid-free paper, and one (1) electronic copy on CD, as well as one (1) copy of all other media produced, shall be provided to the SHPO.

C. The SHPO and other consulting parties agree to provide comments on all technical reports, notifications of proposals for archaeological research, treatment plans, and other documentation arising from this Agreement, within thirty (30) days of receipt. If no comments are received from the SHPO or other consulting parties, the Army or the party submitting the documents for review may assume the non-responding party has no comments.

V. Post Review Discoveries

A. The Army shall ensure that all contracts for activities involving ground disturbance and/or construction shall include the following provisions for the treatment of post review discoveries:

1. In the event that a previously unidentified cultural resource is discovered during ground disturbing activities within the APE, the contractor shall immediately halt all work involving subsurface disturbance in the area of the resource and in the surrounding area where further subsurface remains can reasonably be expected to occur, and notify the proponent of the Undertaking.
2. The proponent of the Undertaking shall immediately notify the CRM. The CRM, or an archaeologist meeting the *Secretary of the Interior's Professional Qualifications Standards* (48 Federal Register 44716) for an archeologist, shall inspect the work site and determine the nature and area of the affected resource and assess whether further investigations are warranted.
3. Work may then continue in the project area outside the site area. However, work in the affected area shall not proceed until either (1) the Army has determined that the discovery is not eligible for inclusion in the National Register, or (2) the Army has developed and implemented an appropriate treatment plan.

B. In the event of a post review discovery the Army shall comply with 36 CFR 800.13(b)(3).

VI. Human Remains

A. The Army will treat all human remains in a manner consistent with the ACHP "Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects" (23 February 2007; http://www.achp.gov/docs/hrpolicy0207.pdf). All reasonable efforts will be made to avoid disturbing gravesites, including those containing Native American human remains and associated artifacts.

B. If human remains and/or associated funerary objects are encountered during the Undertaking, the Army shall immediately halt work in the area and contact the appropriate authorities. If the remains appear to be Native American in origin any such remains and/or objects shall be treated in accordance with the Native American Graves Protection and Repatriation Act (25 USC 3001); its implementing regulations, 43 CFR 10. In the event that any human remains and/or associated funerary objects can not be associated with a Federally recognized Indian Tribe, the Army will follow procedures substantially similar to those set forth in NAGPRA and 43 CFR 10 with respect to the VCI and the Rappahannock.

C. If the remains are determined not to be of Native American origin, the Army shall consult with the SHPO and other appropriate consulting parties. Prior to the archaeological excavation of any remains, the following information shall be submitted for consultation:

1. The name of the property or archaeological site and the specific location from which the recovery is proposed. If the recovery is from a known archaeological site, a state-issued site number must be included.
2. Indication of whether a waiver of public notice is requested and why. If a waiver is not requested, a copy of the public notice (to be published in a newspaper having general circulation in the area for a minimum of four weeks prior to recovery) must be submitted.
3. A copy of the curriculum vita of the skeletal biologist who will perform the analysis of the remains.
4. A statement that the treatment of human skeletal remains and associated artifacts will be respectful.
5. An expected timetable for excavation, osteological analysis, preparation of final report, and final disposition of remains.
6. A statement of the goals and objectives of the removal (to include both excavation and osteological analysis).
7. If a disposition other than reburial is proposed, a statement of justification.

VII. Anti-Deficiency Act

The Army's obligations under this Agreement are subject to the availability of appropriated funds, and the stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act. The Army will make reasonable and good faith efforts to secure the necessary funds to implement its obligations under this Agreement. If compliance with the Anti-Deficiency Act alters or impairs the Army's ability to implement its obligations under this Agreement, the Army will consult in accordance with the amendment and termination procedures found at Stipulation X.

VIII. Status Reports

After execution, and for a period of two (2) years, the Army shall provide the signatories a report on the status of the implementation of the terms of this Agreement every six (6) months, with the first report to be submitted six months after the date of the last signature on this Agreement. After that period, and for the duration of this Agreement, the Army shall provide an annual status report to the signatories to review implementation of the terms of this Agreement and to determine whether amendments are needed. If the signatories agree it is appropriate, an annual meeting may occur to review implementation of the terms of this Agreement, and to determine whether amendments are needed, in lieu of an annual report.

Should a signatory so request, the Army shall convene a meeting of the signatories to further review the implementation of the terms of this Agreement, and/or any other issues that might arise relating to this Undertaking and/or this Agreement.

Upon the completion of all stipulations to this Agreement, the Army shall circulate to the other signatories a signed memorandum documenting that the Army has fulfilled its NHPA responsibilities for this Undertaking.

IX. Dispute Resolution

A. Should any signatory party to this Agreement object in writing to the Army regarding any action carried out or proposed with respect to this Undertaking or the implementation of this Agreement, the Army shall consult with the objecting party to resolve the objection.

B. If, after initiating such consultation, the Army determines that the objection cannot be resolved through consultation with the objecting party, the Army shall forward all documentation relevant to the objection to the ACHP, including the Army's proposed response to the objection. Within thirty (30) days after receipt of all pertinent documentation, the ACHP shall exercise one of the following options:

1. Advise the Army that the ACHP concurs in the Army's proposed response to the objection, whereupon the Army will respond to the objection accordingly;
2. Provide the Army with recommendations, which the Army shall take into account in reaching a final decision regarding the Army's response to the objection; or
3. Notify the Army that the objection will be referred for comment pursuant to 36 CFR 800.7. The Army shall take the resulting comment into account in accordance with 36 CFR 800.7(c)(4).

Prior to reaching a final decision on the dispute, the Army shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response.

Should the ACHP not exercise one of the above options within thirty (30) days after receipt of all pertinent documentation, the Army may assume the ACHP's concurrence in its proposed response to the objection.

C. The Army shall take into account any ACHP recommendation or comment provided in accordance with this stipulation with reference only to the subject of the objection; the Army's responsibility to carry out all actions under this Agreement that are not subjects of the objection shall remain unchanged.

D. At any time during implementation of the measures stipulated in this Agreement, should an objection pertaining to this Agreement or the effect of the Undertaking on historic properties be raised by a member of the public, the Army shall notify the parties to this Agreement and take the objection into account.

X. Amendment and Termination

A. Any signatory to this Agreement may request that the Agreement be amended, whereupon the signatories shall consult and consider any recommended changes to the Agreement. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

B. If the Army determines that it cannot implement the terms of this Agreement, or if a signatory determines that the Agreement is not being properly implemented, the Army and/or the signatory may propose to the other signatories that the Agreement be terminated.

C. The signatory proposing to terminate this Agreement shall so notify the other signatories to the Agreement, explaining the reasons for termination and affording them at least thirty (30) days to consult

and seek alternatives to termination through an amendment. If such an amendment cannot be reached, any signatory may terminate this Agreement upon written notification to the other signatories.

D. In the event of termination, all mitigation efforts completed prior to termination shall be documented by the Army. The document shall establish what adverse effects have been successfully mitigated. The Army shall then comply with 36 CFR Part 800, and other applicable regulations, with regard to this Undertaking. Termination shall also include the submission of any outstanding documentation on any work done up to and including the date of termination.

XI. Effective Date and Duration of the Programmatic Agreement

This Agreement shall take effect on the date it is signed by the last signatory and will remain in effect for ten (10) years, unless extended through amendment or terminated pursuant to Stipulation X.

XII. Execution of the Programmatic Agreement

Execution of this Agreement and implementation of its terms evidences that the Army has taken into account the effects of the Undertaking on historic properties and has afforded the ACHP a reasonable opportunity to comment. Compliance with this Agreement fulfills the Army's responsibilities under the NHPA relative to this Undertaking at Fort A.P. Hill.

U.S. DEPARTMENT OF THE ARMY,
COMMANDING OFFICER, FORT A.P. HILL

By: _____ Date: 21 Aug 08
Michael Graese, Lieutenant Colonel, U.S. Army
Commander, Fort A.P. Hill

VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

By: _____ Date: 8/22/08
Kathleen S. Kilpatrick
Director and State Historic Preservation Officer

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: _____ Date: 8/28/08
John M. Fowler
Executive Director

Concur:

ARCHEOLOGICAL SOCIETY OF VIRGINIA

By: _____ Date: _____
Patrick O'Neill, President Elect

CAROLINE COUNTY HISTORICAL SOCIETY

By: _____ Date: _____
Cleo Coleman

CIVIL WAR PRESERVATION TRUST

By: _____ Date: _____
Jenny Cross

U.S. DEPARTMENT OF THE ARMY,
COMMANDING OFFICER, FORT A.P. HILL

By:_____ Date: _____
Michael Graese, Lieutenant Colonel, U.S. Army
Commander, Fort A.P. Hill

VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

By:_____ Date: _____
Kathleen S. Kilpatrick
Director and State Historic Preservation Officer

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By:_____ Date: _____
John M. Fowler
Executive Director

Concur:

ARCHEOLOGICAL SOCIETY OF VIRGINIA

By:_____ Date: 9-14-08
Patrick O'Neill, President Elect

CAROLINE COUNTY HISTORICAL SOCIETY

By:_____ Date: _____
Cleo Coleman

CIVIL WAR PRESERVATION TRUST

By:_____ Date: _____
Jenny Cross

Mar 08

U.S. DEPARTMENT OF THE ARMY,
COMMANDING OFFICER, FORT A.P. HILL

By:_____ Date: _____
Michael Graese, Lieutenant Colonel, U.S. Army
Commander, Fort A.P. Hill

VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

By:_____ Date: _____
Kathleen S. Kilpatrick
Director and State Historic Preservation Officer

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By:_____ Date: _____
Don Klima
Director, Office of Federal Agency Programs

Concur:

ARCHEOLOGICAL SOCIETY OF VIRGINIA

By:_____ Date: _____
Patrick O'Neill
President Elect

CAROLINE COUNTY HISTORICAL SOCIETY

By: Cleo Coleman Date: February 2009
Cleo Coleman

CIVIL WAR PRESERVATION TRUST

By:_____ Date: _____
Jenny Cross

U.S. DEPARTMENT OF THE ARMY,
COMMANDING OFFICER, FORT A.P. HILL

By:_____ Date: _____
Michael Graese, Lieutenant Colonel, U.S. Army
Commander, Fort A.P. Hill

VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

By:_____ Date: _____
Kathleen S. Kilpatrick
Director and State Historic Preservation Officer

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By:_____ Date: _____
John M. Fowler
Executive Director

Concur:

ARCHEOLOGICAL SOCIETY OF VIRGINIA

By:_____ Date: _____
Patrick O'Neill, President Elect

CAROLINE COUNTY HISTORICAL SOCIETY

By:_____ Date: _____
Cleo Coleman

CIVIL WAR PRESERVATION TRUST

By: Mary Koik Date: 6/1/09
~~Jenny Cross~~ Mary Koik, Deputy Director of Communications

COUNCIL OF VIRGINIA ARCHAEOLOGISTS

By: Esther C White Date: 9-4-08
Esther White, President

NATIONAL PARK SERVICE

By:_____ Date: _____
Russell P. Smith, Superintendent
Fredericksburg & Spotsylvania National Military Park

RAPPAHANNOCK TRIBE

By:_____ Date: _____
Anne Richardson, Chief

UNITED KEETOOWAH BAND OF CHEROKEE INDIANS IN OKLAHOMA

By:_____ Date: _____
George Wickliffe, Chief

VIRGINIA COUNCIL ON INDIANS

By:_____ Date: _____
Deanna Beacham, Program Specialist

COUNCIL OF VIRGINIA ARCHAEOLOGISTS

By:_____ Date: _____
Esther White, President

NATIONAL PARK SERVICE

By: Russell P. Smith Date: 9/19/08
Russell P. Smith, Superintendent
Fredericksburg & Spotsylvania National Military Park

RAPPAHANNOCK TRIBE

By:_____ Date: _____
Anne Richardson, Chief

UNITED KEETOOWAH BAND OF CHEROKEE INDIANS IN OKLAHOMA

By:_____ Date: _____
George Wickliffe, Chief

VIRGINIA COUNCIL ON INDIANS

By:_____ Date: _____
Deanna Beacham, Program Specialist

COUNCIL OF VIRGINIA ARCHAEOLOGISTS

By:_____ Date: _____
Esther White, President

NATIONAL PARK SERVICE

By:_____ Date: _____
Russell P. Smith, Superintendent
Fredericksburg & Spotsylvania National Military Park

RAPPAHANNOCK TRIBE

By: Anne Richardson Date: 11-13-08
Anne Richardson, Chief

UNITED KEETOOWAH BAND OF CHEROKEE INDIANS IN OKLAHOMA

By:_____ Date: _____
George Wickliffe, Chief

VIRGINIA COUNCIL ON INDIANS

By:_____ Date: _____
Deanna Beacham, Program Specialist

COUNCIL OF VIRGINIA ARCHAEOLOGISTS

By:_____ Date: _____
Esther White, President

NATIONAL PARK SERVICE

By:_____ Date: _____
Russell P. Smith, Superintendent
Fredericksburg & Spotsylvania National Military Park

RAPPAHANNOCK TRIBE

By:_____ Date: _____
Anne Richardson, Chief

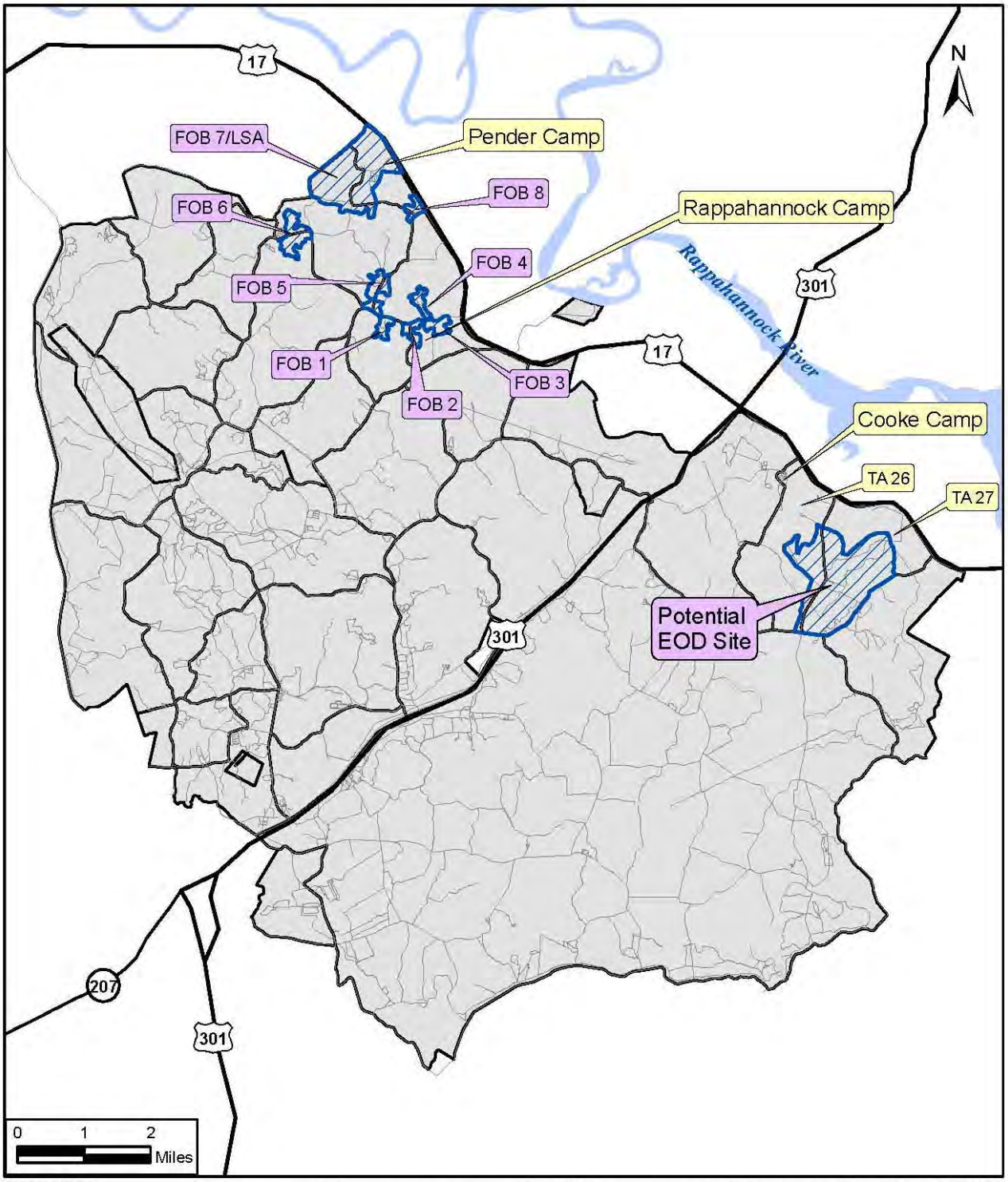
UNITED KEETOOWAH BAND OF CHEROKEE INDIANS IN OKLAHOMA

By:_____ Date: _____
George Wickliffe, Chief

VIRGINIA COUNCIL ON INDIANS

By: Deanna Beacham Date: 1/28/09
Deanna Beacham, Program Specialist

Attachment A
Area of Potential Effect for Proposed BRAC Activities at Fort A.P. Hill



LEGEND
- Installation Property
- Road
- Proposed Project Area

Proposed Sites at Fort A.P. Hill

Fort A.P. Hill, Virginia

Attachment B

Reports for Cultural Resource Investigations Conducted in Association with Proposed BRAC-Related Activities at Fort A.P. Hill

Knepper, Dennis, Christopher Bowen, Laurie Paonessa, Cynthia Auman, and Rachael Mangum
2007 *Archaeological Assessment of 1,033 Acres and Phase I Archaeological Survey of 27 Acres (High Sensitivity) in the EOD Range, Fort A.P. Hill, Caroline County, Virginia.* Prepared for U.S. Army Corps of Engineers, Norfolk District, by Versar, Inc.

Moore, Edward, Katherine Roberts, Tracey Jones, Nicole Wade, John Bedell, and John Mullin
2007 *Archaeological Survey of Forward Operating Bases and Explosive Ordnance Demolition Areas at Fort A.P. Hill, Caroline County, Virginia.* Prepared for United States Army Medical Research Acquisition Activity on behalf of U.S. Army Environmental Center, by The Louis Berger Group, Inc.

Mullin, John
2007 *Additional Cultural Resource Investigations; Archaeological Sites 44CE0503, 44CE0506, 44CE0509, 44CE0511, 44CE0512, 44CE0513, 44CE0514, 44CE0515, and 44CE0517; Proposed Explosive Ordnance Disposal Range, Fort A.P. Hill, Caroline County, Virginia.* Prepared by Fort A.P. Hill Cultural Resource Manager.

Wade, Nicole, Katherine Roberts, Megan Rupnik, Tracey Jones, Stephanie Jacobe, John Mullin, and John Bedell
2007 *Archaeological Evaluation of 24 Sites in Forward Operating Bases and Explosive Ordnance Demolition Areas at Fort A.P. Hill, Caroline County, Virginia.* Prepared for United States Army Medical Research Acquisition Activity on behalf of U.S. Army Environmental Center, by The Louis Berger Group, Inc.

Attachment C

Archaeological Sites Identified in the APE for Proposed BRAC-Related Activities at Fort A.P. Hill

Site Number	Area	Site Type	Temporal Period	National Register Recommendation	Report Source For Recommendation
44CE0082	FOB 7/LSA	House Site	19th/20th Century	Not Eligible	Berger I
44CE0110	FOB 7/LSA	Woodford Plantation	18th to 20th Centuries	Eligible for inclusion in the National Register under Criteria A, B, and D.	Berger I
44CE0306	FOB 7/LSA	Temporary Campsite	Unknown Prehistoric	Not Eligible	Berger I
44CE0325	FOB 7/LSA	Civil War Trench	1862-1863	Eligible	Berger II
44CE0386	FOB 7/LSA	Civil War Camp	1862-1863	Eligible	Berger II
44CE0391	FOB 8	Road Bed	18th/19th Century	Not Eligible	Berger II
44CE0393	FOB 8	House Site	19th/20th Century	Not Eligible	Berger II
44CE0400	FOB 4	House Site	20th Century	Not Eligible	Berger I
44CE0402	FOB 4	Civil War Camp	1862-1863	Eligible	Berger II
44CE0478	FOB 2	House Site	19th/20th Century	ELPA	Berger II
44CE0479	FOB 5	House Site	19th/20th Century	Not Eligible	Berger II
44CE0480	FOB 5	House Site	19th/20th Century	Not Eligible	Berger I
44CE0481	FOB 6	House Site	19th/20th Century	Not Eligible	Berger I
44CE0482	FOB 6	House Site	19th/20th Century	Eligible	Berger II
44CE0483	FOB 6	House Site	19th/20th Century	Eligible	Berger II
44CE0484	FOB 6	Temporary Campsite	Unknown Prehistoric	Not Eligible	Berger II
44CE0485	FOB 6	Lithic Scatter	Unknown Prehistoric	Not Eligible	Berger I
44CE0486	FOB 6	Lithic Scatter	Unknown Prehistoric	Not Eligible	Berger I
44CE0487	FOB 4	House Site	Early 19th Century	Not Eligible	Berger II
44CE0488	FOB 7/LSA	House Site	18th/19th Century	Eligible	Berger II
44CE0489	FOB 7/LSA	Civil War Camp	1862-1863	Eligible	Berger II
44CE0490	FOB 7/LSA	Civil War Camp/House Site	1862-1863/20th Century Domestic	Eligible	Berger I
44CE0491	FOB 7	Campsite/ possible processing Locus	Unknown Prehistoric	Not Eligible	Berger I
44CE0492	FOB 5	Road	Possibly 19th/20th Century	Not Eligible	Berger I
44CE0493	EOD A	Trash Scatter	18th/19th Century	Not Eligible	Berger I
44CE0494	EOD J	Undetermined	Unknown Historic	Not Eligible	Berger II
44CE0495	EOD O	House Site	19th/20th Century	Not Eligible	Berger II

Archaeological Sites Identified in the APE for Proposed BRAC-Related Activities at Fort A.P. Hill (cont.)

Site Number	Area	Site Type	Temporal Period	National Register Recommendation	Report Source For Recommendation
44CE0496	EOD P2	House Site	19th/20th Century	Not Eligible	Berger I
44CE0497	EOD AA	Undetermined	Unknown Historic/ Unknown Prehistoric	Not Eligible	Berger II
44CE0498	EOD M	Trash Scatter	18th/19th Century	Not Eligible	Berger I
44CE0499	FOB 3	House Site	19th/20th Century	Not Eligible	Berger II
44CE0500	FOB 7/LSA	Temporary Camp	Unknown Prehistoric	Not Eligible	Berger I
44CE0503	EOD	Military/Defense - Military facility	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0504	EOD	Domestic - Dwelling, single	19th Century, 4th quarter; 20th Century	Not Eligible	Berger II
44CE0505	EOD	Military/Defense - Earthworks	19th Century	ELPA	Versar, Berger I
44CE0506	EOD	Military/Defense - Earthworks	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0507	EOD	Domestic - Farmstead	19th Century	Not Eligible	Berger II
44CE0508	EOD	Dwelling, single	20th Century, 1st half	Not Eligible	Berger II
44CE0509	EOD	Military/Defense - Earthworks	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0510	EOD	Education - School	20th Century, 1st half	Not Eligible	Berger II
44CE0511	EOD	Military/Defense - Earthworks	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0512	EOD	Military/Defense – Earthworks, Rifle pits	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0513	EOD	Military/Defense – Quonset hut/bunker	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0514	EOD	Military/Defense – Earthworks, Berm	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0515	EOD	Military/Defense – Earthworks, Berm	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0516	EOD	Domestic - Dwelling, single	19th Century, 4th quarter; 20th Century, 1st quarter	Not Eligible	Berger II
44CE0517	EOD	Military/Defense - Quonset hut	20th Century, 2nd half	Not Eligible	FAPH CRM (cf. Versar)
44CE0518	EOD	Domestic - Trash scatter	19th Century, 4th quarter; 20th Century, 1st half	Not Eligible	Berger II

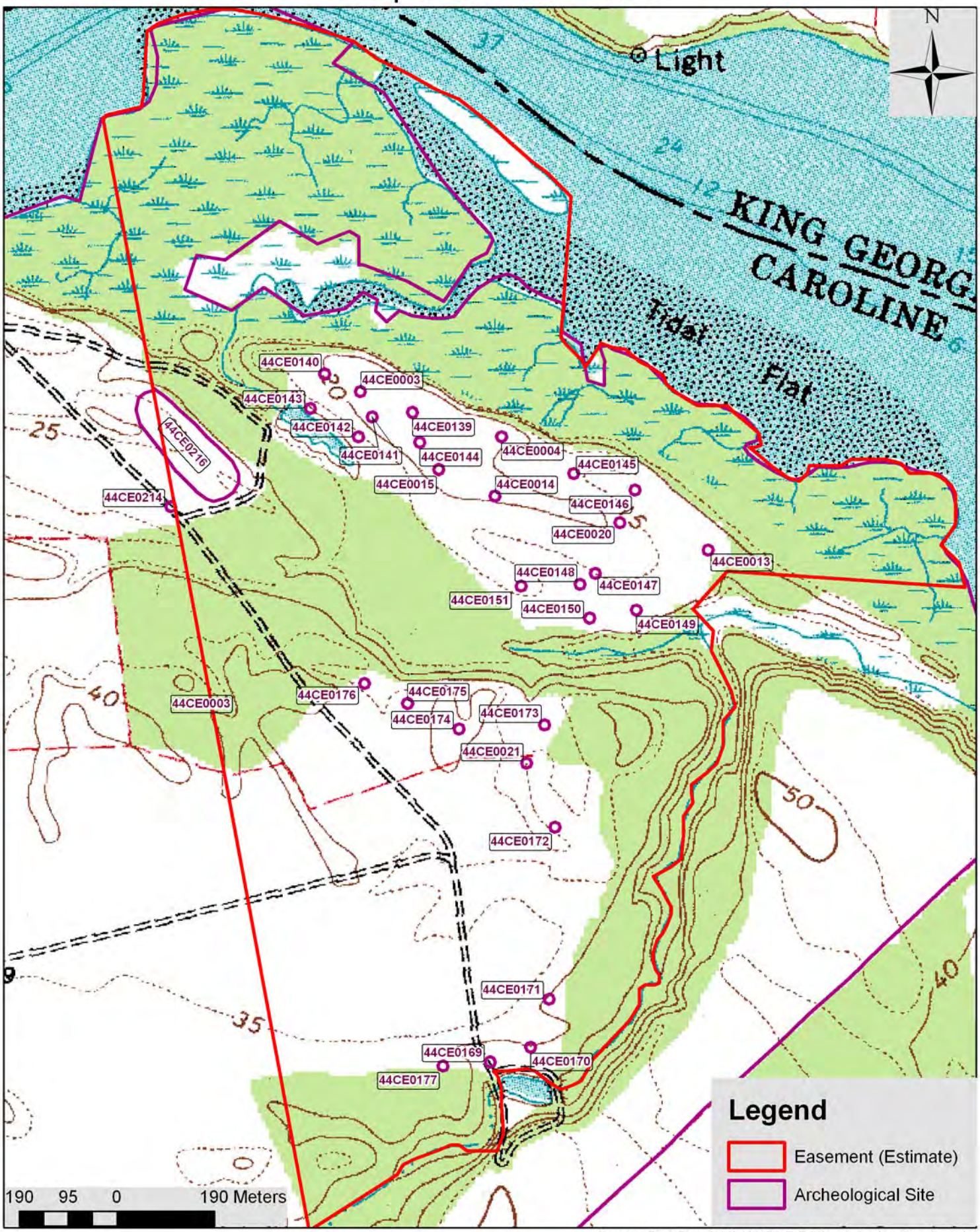
ELPA – Eligible for the purposes of a program alternative
Berger I= Moore et al. 2007
Berger II=Wade et al. 2007
FAPH CRM =Mullin 2007
Versar =Knepper et al. 2007

Attachment D

Historic Properties Identified within the APE for Proposed BRAC-Related Activities Fort A.P. Hill

Site Number	Area	Site Type	Temporal Period	Applicable National Register Criteria
44CE0110	FOB 7/LSA	Woodford Plantation	18th to 20th Centuries	A, B, and D
44CE0325	FOB 7/LSA	Civil War Trench	1862-1863	A and D
44CE0386	FOB 7/LSA	Civil War Camp	1862-1863	A and D
44CE0402	FOB 4	Civil War Camp	1862-1863	A and D
44CE0478	FOB 2	House Site	19th/20th Century	A and D
44CE0482	FOB 6	House Site	19th/20th Century	A and D
44CE0483	FOB 6	House Site	19th/20th Century	A and D
44CE0488	FOB 7/LSA	House Site	18th/19th Century	A and D
44CE0489	FOB 7/LSA	Civil War Camp	1862-1863	A and D
44CE0490	FOB 7/LSA	Civil War Camp/House Site	1862-1863/20th Century Domestic	A and D
44CE0505	EOD	Military/Defense - Earthworks	19th Century	A and D

Attachment E
Proposed Easement



Source: Port Royal, VA USGS 7.5-Minute Series Quadrangle

Attachment F

Camden District Archeological Sites Within the Easement

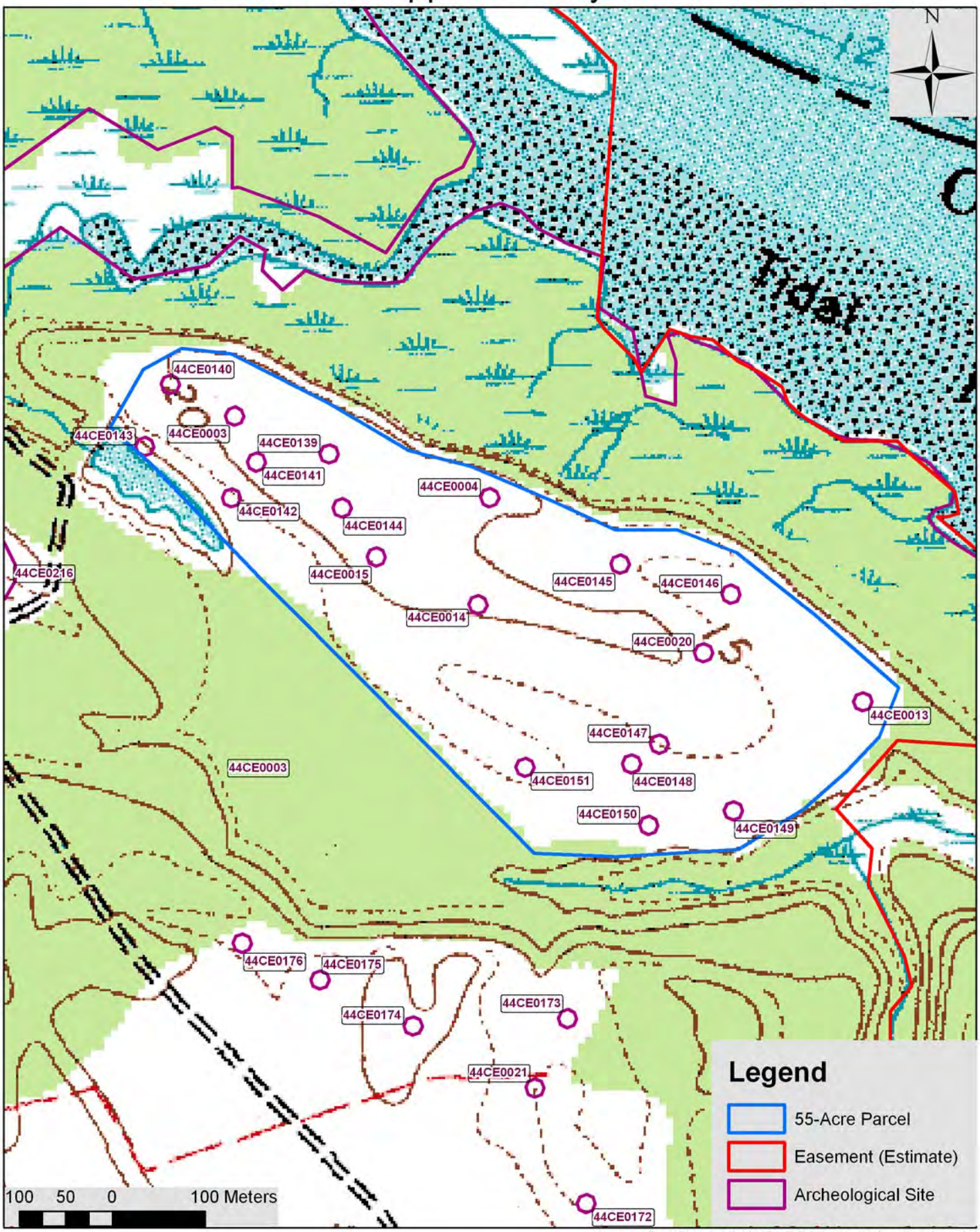
VDHR Number	Theme	Site Function	Temporal Period	Status
44CE0003	Domestic Industry/Processing/Extraction	Camp, Single Dwelling Lithic Workshop	Camden District (Middle Archaic through 20th Century)	VLR, NHL, NRHP
44CE0004	Indeterminate	Unknown Prehistoric	Woodland	HD: Contributing
44CE0013	Domestic	Single Dwelling	17th Century	HD: Contributing
44CE0014	Domestic Industry/Processing/Extraction	Camp Lithic Workshop	Late Archaic; Late Woodland; Middle Woodland	HD: Contributing
44CE0015	Domestic Industry/Processing/Extraction	Camp Lithic Workshop	17th Century (2nd half); Late Archaic; Late Woodland; Middle Woodland	HD: Contributing
44CE0021	Domestic	Single Dwelling	*17th Century; Woodland*	HD: Contributing
44CE0139	Domestic	Village	17th Century (2nd half); Late Archaic; Late Woodland	HD: Contributing
44CE0140	Domestic	Village	17th Century (2nd half); Middle Woodland	HD: Contributing
44CE0141	Domestic	Village	17th Century (2nd half); Late Woodland	HD: Contributing
44CE0142	Domestic	Village	17th Century (2nd half); Late Archaic; Late Woodland	HD: Contributing
44CE0143	Domestic	Village	17th Century (2nd half); Late Archaic; Middle Woodland	HD: Contributing
44CE0144	Domestic	Village	17th Century (2nd half); Late Woodland; Middle Woodland	HD: Contributing
44CE0145	Domestic	Village	Late Woodland	HD: Contributing
44CE0146	Domestic	Village	17th Century (2nd half); Late Woodland	HD: Contributing
44CE0147	Domestic	Village	17th Century (2nd half); Late Woodland	HD: Contributing
44CE0148	Domestic	Village	17th Century (2nd half); Archaic; Late Woodland	HD: Contributing
44CE0149	Domestic	Village	17th Century (2nd half); Late Woodland	HD: Contributing
44CE0150	Domestic Industry/Processing/Extraction	Base Camp, Village Lithic Workshop	17th Century (2nd half); Woodland	HD: Contributing
44CE0151	Domestic	Base Camp	Early/Middle Woodland	HD: Contributing
44CE0169	Domestic Industry/Processing/Extraction	Camp Lithic Workshop	Prehistoric/Unknown	HD: Contributing

Camden District Archeological Sites Within the Easement
(cont.)

VDHR Number	Theme	Site Function	Temporal Period	Status
44CE0170	Domestic Industry/Processing/Extraction	Camp Lithic Workshop	17th Century; Early Archaic; Early Woodland; Late Woodland	HD: Contributing
44CE0171	Industry/Processing/Extraction	Lithic Workshop	Late Archaic; Middle Archaic	HD: Contributing
44CE0172	Domestic Industry/Processing/Extraction	Camp Lithic Workshop	Late Archaic; Middle Archaic; Woodland	HD: Contributing
44CE0173	Industry/Processing/Extraction	Lithic Workshop	Late Archaic; Middle Woodland	HD: Contributing
44CE0174	Domestic Industry/Processing/Extraction	Base Camp Lithic Workshop	Middle Woodland	HD: Contributing
44CE0175	Domestic Industry/Processing/Extraction	Base Camp Lithic Workshop	Middle Woodland	HD: Contributing
44CE0176	Domestic	Unknown Historic	Unknown Historic (*18th/19th Century*)	HD: Contributing
44CE0177	Domestic Industry/Processing/Extraction	Camp Lithic Workshop	Prehistoric/Unknown	HD: Contributing
44CE0214	Domestic	Unknown Historic	19th Century (2nd quarter)	HD: Contributing
44CE0216	Industry/Processing/Extraction	Lithic Workshop	Early Archaic; Woodland	HD: Contributing

Attachment G

Location of the Approximately 55-Acre Parcel



Source: Port Royal, VA USGS 7.5-Minute Series Quadrangle

Amendment to the Fort A.P. Hill BRAC Programmatic Agreement

AMENDMENT TO
THE PROGRAMMATIC AGREEMENT
AMONG
THE UNITED STATES ARMY,
THE VIRGINIA STATE HISTORIC PRESERVATION OFFICER,
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING IMPLEMENTATION OF PORTIONS OF
THE BRAC REALIGNMENT OF FORT LEE, VIRGINIA
RELATIVE TO FORT A.P. HILL, VIRGINIA

WHEREAS the Agreement was executed on August 28, 2008; and

WHEREAS the United States Army (Army) has identified additional installation lands that will be included in the training area for proposed Base Realignment and Closure (BRAC) related activities at Fort A.P. Hill; and

WHEREAS the additional lands were not included in the area of potential effects (APE) established in the original Agreement; and

WHEREAS cultural resource surveys and evaluations completed for a 1,028-acre Explosive Ordnance Disposal (EOD) site expansion area identified 11 archaeological sites and determined that none of these archaeological sites are eligible for inclusion in the National Register of Historic Places and the Virginia State Historic Preservation Officer (SHPO) concurred with these determinations August 22, 2008; and

WHEREAS cultural resource investigations for a 91-acre demolition range that will be used for BRAC-activities, and which is located in an impact area with the potential for unexploded ordnance and includes an active existing demolition range, determined that no historic properties will be adversely affected by the range and the SHPO concurred with this determination April 29, 2010; and

WHEREAS the Army has considered the potential effects of military training noise on known and potential historic properties and has determined that such noise will have no adverse effects on historic properties and the SHPO concurred with this determination April 29, 2010; and

WHEREAS the Army, at the recommendation of the Advisory Council on Historic Preservation (ACHP), has determined that the Agreement should be amended to include the entire Fort A.P. Hill installation within the APE, and to include a new stipulation to address proposed BRAC-related projects (i.e., those projects at Fort A.P. Hill that the Army has determined are necessary to assist in implementation of the approved 2005 BRAC recommendations for the realignment of Fort Lee, Virginia) outside of the portions of the APE that were previously surveyed for cultural resources in association with proposed BRAC-related activities.

NOW THEREFORE, in accordance with Stipulation X of the Agreement, the Army, SHPO, and ACHP agree to amend the Agreement as follows:

1. Amend Attachment A (see attached) to include:
   A revised APE that consists of the entire Fort A.P. Hill installation.

AND

2. Amend Attachment B (see attached) to include:
   Three additional references for reports of cultural resource investigations.

AND

3. Amend Attachment C (see attached) to include:
Eleven additional archaeological sites identified in the proposed EOD area.

AND

4. Add new Stipulation XIII:
XIII. Project Additions
Prior to the termination of this Agreement, if the scope of work for any part of the BRAC-related undertaking requires development outside of the portions of the APE previously surveyed for BRAC-activities, the following guidelines shall be utilized by the Army to ensure that such new projects will not adversely affect historic properties:

A. The Army shall determine if the project has the potential to adversely affect historic properties and shall notify the consulting parties by email and request their review and comment within 30 calendar days of notification.
   1. If the Army determines that the project will have no adverse effects to historic properties and the SHPO concurs, the Army shall notify the consulting parties, by email, of the SHPO concurrence.
   2. If the Army determines that the project will have no adverse effects to historic properties and the SHPO does not concur, the Army shall take the SHPO's comments into consideration and try to address the SHPO's concerns. If the Army is unable to adequately address the SHPO's concerns in a manner that the SHPO no longer believes the adverse effect exists; or if after attempting to address the SHPO's concerns the Army and the SHPO still do not agree on effect, the Army may implement Stipulation IX (Dispute Resolution).
   3. If the Army determines that the project will have adverse effects on historic properties and the SHPO concurs, the Army shall implement Stipulation V (Post Review Discoveries).

B. The Army may proceed with the proposed project after the SHPO has concurred and/or the process in Stipulation V or IX has been completed and the project has been modified, as necessary.

Signed:

U.S. DEPARTMENT OF THE ARMY,
COMMANDING OFFICER, FORT A.P. HILL

By: _____ Date: 24MAY2011
John Haefner, Lieutenant Colonel, US Army Commanding

STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: 6/5/11
Kathleen S. Kilpatrick, Director, Department of Historic Resources

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: _____ Date: 6/21/11
John M. Fowler, Executive Director

Concur:

ARCHEOLOGICAL SOCIETY OF VIRGINIA

By:_____ Date: _____
Patrick O'Neill

CAROLINE COUNTY HISTORICAL SOCIETY

By:_____ Date: _____
Cleo Coleman

CIVIL WAR PRESERVATION TRUST

By:_____ Date: _____
Mary Koik

COUNCIL OF VIRGINIA ARCHAEOLOGISTS

By:_____ Date: _____
Elizabeth Crowell, President

NATIONAL PARK SERVICE

By:_____ Date: _____
Russell P. Smith, Superintendent
Fredericksburg & Spotsylvania National Military Park

RAPPAHANNOCK TRIBE

By:_____ Date: _____
Anne Richardson, Chief

TOWN OF PORT ROYAL

By:_____ Date: _____
Nancy Long, Mayor

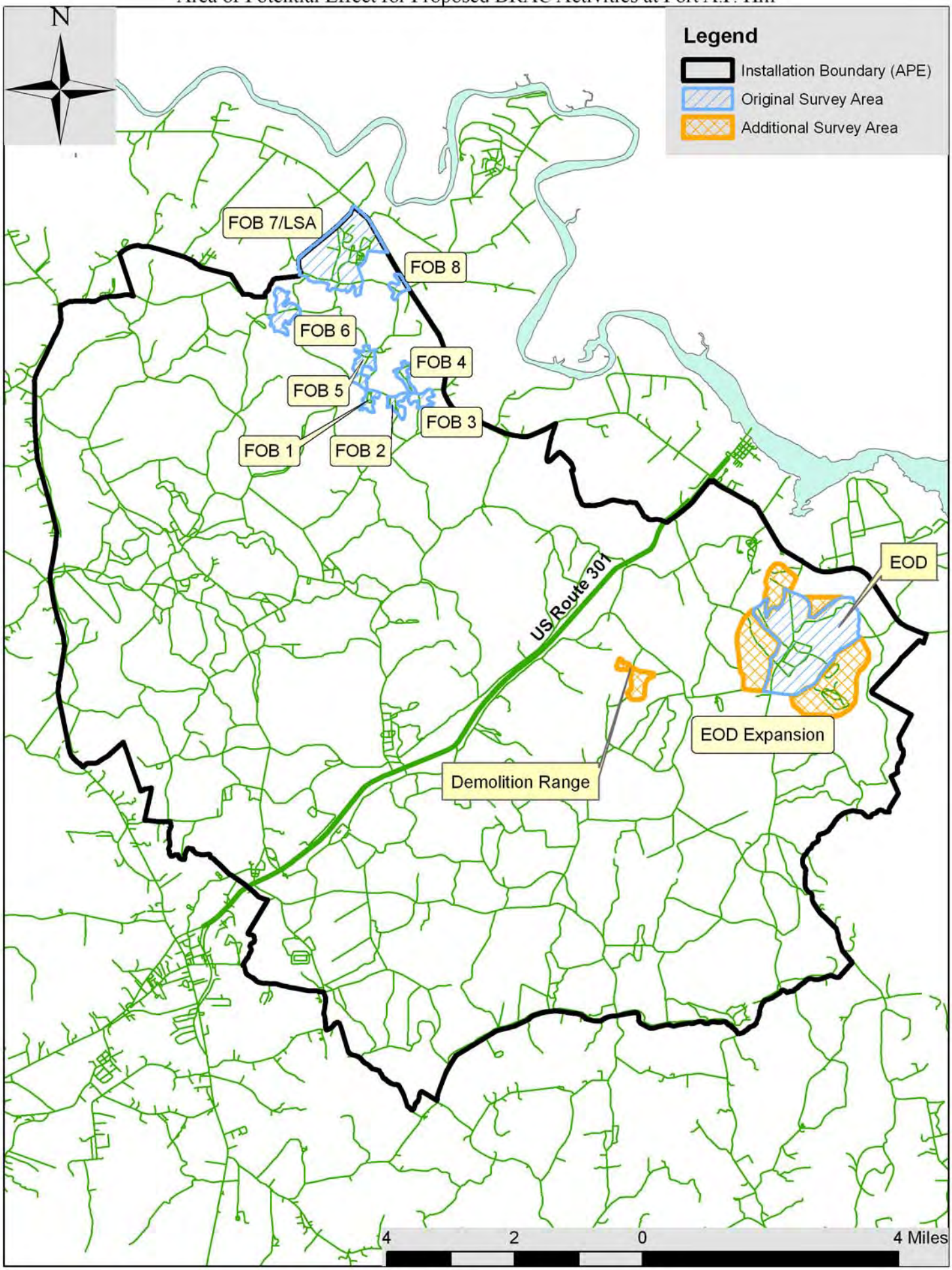
UNITED KEETOOWAH BAND OF CHEROKEE INDIANS IN OKLAHOMA

By:_____ Date: _____
George Wickliffe, Chief

VIRGINIA COUNCIL ON INDIANS

By:_____ Date: _____
Deanna Beacham, Program Specialist

Attachment A (Amended)
Area of Potential Effect for Proposed BRAC Activities at Fort A.P. Hill



Attachment B (Amended)

Reports for Cultural Resource Investigations Conducted in Association with Proposed BRAC-Related Activities at Fort A.P. Hill

Gregory, Danny

2008 *Archaeological Survey of Approximately 1,028 Acres for Explosive Ordnance Demolition Training Areas at Fort A.P. Hill, Caroline County, Virginia.* Prepared for United States Army Corps of Engineers, Mobile District, by The Louis Berger Group, Inc.

Knepper, Dennis, Christopher Bowen, Laurie Paonessa, Cynthia Auman, and Rachael Mangum

2007 *Archaeological Assessment of 1,033 Acres and Phase I Archaeological Survey of 27 Acres (High Sensitivity) in the EOD Range, Fort A.P. Hill, Caroline County, Virginia.* Prepared for U.S. Army Corps of Engineers, Norfolk District, by Versar, Inc.

Moore, Edward, Katherine Roberts, Tracey Jones, Nicole Wade, John Bedell, and John Mullin

2007 *Archaeological Survey of Forward Operating Bases and Explosive Ordnance Demolition Areas at Fort A.P. Hill, Caroline County, Virginia.* Prepared for United States Army Medical Research Acquisition Activity on behalf of U.S. Army Environmental Center, by The Louis Berger Group, Inc.

Mullin, John

2007 *Additional Cultural Resource Investigations; Archaeological Sites 44CE0503, 44CE0506, 44CE0509, 44CE0511, 44CE0512, 44CE0513, 44CE0514, 44CE0515, and 44CE0517; Proposed Explosive Ordnance Disposal Range, Fort A.P. Hill, Caroline County, Virginia.* Prepared by Fort A.P. Hill Cultural Resource Manager.

2008 *Phase II Archaeological Evaluations, Sites 44CE0551 and 44CE0555, Fort A.P. Hill, Caroline County, Virginia.* Prepared by Fort A.P. Hill Cultural Resource Manager

2010 *Additional Cultural Resource Survey, Explosive Ordnance Demolition Area, Fort A.P. Hill, Caroline County, Virginia.* Prepared by Fort A.P. Hill Cultural Resource Manager

Wade, Nicole, Katherine Roberts, Megan Rupnik, Tracey Jones, Stephanie Jacobe, John Mullin, and John Bedell

2007 *Archaeological Evaluation of 24 Sites in Forward Operating Bases and Explosive Ordnance Demolition Areas at Fort A.P. Hill, Caroline County, Virginia.* Prepared for United States Army Medical Research Acquisition Activity on behalf of U.S. Army Environmental Center, by The Louis Berger Group, Inc.

Attachment C (Amended)
Archaeological Sites Identified in the Survey Area for Proposed BRAC-Related Activities at Fort A.P. Hill

Site Number	Area	Site Type	Temporal Period	National Register Recommendation	Report Source For Recommendation
44CE0082	FOB 7/LSA	House Site	19th/20th Century	Not Eligible	Berger I
44CE0110	FOB 7/LSA	Woodford Plantation	18th to 20th Centuries	Eligible	Berger I
44CE0292	EOD Expansion	Artifact Scatter	Woodland Period; 19th/20th Century	No Eligible	Berger III
44CE0293	EOD Expansion	Artifact Scatter	Woodland Period	No Eligible	Berger III
44CE0306	FOB 7/LSA	Temporary Campsite	Unknown Prehistoric	Not Eligible	Berger I
44CE0325	FOB 7/LSA	Civil War Trench	1862-1863	Eligible	Berger II
44CE0386	FOB 7/LSA	Civil War Camp	1862-1863	Eligible	Berger II
44CE0391	FOB 8	Road Bed	18th/19th Century	Not Eligible	Berger II
44CE0393	FOB 8	House Site	19th/20th Century	Not Eligible	Berger II
44CE0400	FOB 4	House Site	20th Century	Not Eligible	Berger I
44CE0402	FOB 4	Civil War Camp	1862-1863	Eligible	Berger II
44CE0478	FOB 2	House Site	19th/20th Century	ELPA	Berger II
44CE0479	FOB 5	House Site	19th/20th Century	Not Eligible	Berger II
44CE0480	FOB 5	House Site	19th/20th Century	Not Eligible	Berger I
44CE0481	FOB 6	House Site	19th/20th Century	Not Eligible	Berger I
44CE0482	FOB 6	House Site	19th/20th Century	Eligible	Berger II
44CE0483	FOB 6	House Site	19th/20th Century	Eligible	Berger II
44CE0484	FOB 6	Temporary Campsite	Unknown Prehistoric	Not Eligible	Berger II
44CE0485	FOB 6	Lithic Scatter	Unknown Prehistoric	Not Eligible	Berger I
44CE0486	FOB 6	Lithic Scatter	Unknown Prehistoric	Not Eligible	Berger I
44CE0487	FOB 4	House Site	Early 19th Century	Not Eligible	Berger II
44CE0488	FOB 7/LSA	House Site	18th/19th Century	Eligible	Berger II
44CE0489	FOB 7/LSA	Civil War Camp	1862-1863	Eligible	Berger II
44CE0490	FOB 7/LSA	Civil War Camp/House Site	1862-1863/20th Century Domestic	Eligible	Berger I
44CE0491	FOB 7	Campsite/ possible processing Locus	Unknown Prehistoric	Not Eligible	Berger I
44CE0492	FOB 5	Road	Possibly 19th/20th Century	Not Eligible	Berger I
44CE0493	EOD A	Trash Scatter	18th/19th Century	Not Eligible	Berger I
44CE0494	EOD J	Undetermined	Unknown Historic	Not Eligible	Berger II
44CE0495	EOD O	House Site	19th/20th Century	Not Eligible	Berger II
44CE0496	EOD P2	House Site	19th/20th Century	Not Eligible	Berger I
44CE0497	EOD AA	Undetermined	Unknown Historic/Unknown Prehistoric	Not Eligible	Berger II

ELPA – Eligible for the purposes of a program alternative

Berger I= Moore et al. 2007
Berger II=Wade et al. 2007
Berger III=Gregory 2008
FAPH CRM I=Mullin 2007
FAPH CRM II=Mullin 2008
Versar =Knepper et al. 2007

Attachment C (cont.)

Site Number	Area	Site Type	Temporal Period	National Register Recommendation	Report Source For Recommendation
44CE0498	EOD M	Trash Scatter	18th/19th Century	Not Eligible	Berger I
44CE0499	FOB 3	House Site	19th/20th Century	Not Eligible	Berger II
44CE0500	FOB 7/LSA	Temporary Camp	Unknown Prehistoric	Not Eligible	Berger I
44CE0503	EOD	Military/Defense - Military facility	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0504	EOD	Domestic - Dwelling, single	19th Century, 4th quarter; 20th Century	Not Eligible	Berger II
44CE0505	EOD	Military/Defense - Earthworks	19th Century	ELPA	Versar, Berger I
44CE0506	EOD	Military/Defense - Earthworks	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0507	EOD	Domestic - Farmstead	19th Century	Not Eligible	Berger II
44CE0508	EOD	Dwelling, single	20th Century, 1st half	Not Eligible	Berger II
44CE0509	EOD	Military/Defense - Earthworks	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0510	EOD	Education - School	20th Century, 1st half	Not Eligible	Berger II
44CE0511	EOD	Military/Defense - Earthworks	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0512	EOD	Military/Defense – Earthworks, Rifle pits	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0513	EOD	Military/Defense – Quonset hut/bunker	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0514	EOD	Military/Defense – Earthworks, Berm	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0515	EOD	Military/Defense – Earthworks, Berm	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0516	EOD	Domestic - Dwelling, single	19th Century, 4th quarter; 20th Century, 1st quarter	Not Eligible	Berger II
44CE0517	EOD	Military/Defense - Quonset hut	20th Century, 2nd half	Not Eligible	FAPH CRM I (cf. Versar)
44CE0518	EOD	Domestic - Trash scatter	19th Century, 4th quarter; 20th Century, 1st half	Not Eligible	Berger II
44CE0551	EOD Expansion	Domestic – Farmstead	18th-20th Century	Not Eligible	FAPH CRM II (cf Berger III)
44CE0555	EOD Expansion	Trash Pit	20th Century	Not Eligible	FAPH CRM II (cf Berger III)
44CE0556	EOD Expansion	Artifact Scatter	19th/20th Century	Not Eligible	Berger III
44CE0557	EOD Expansion	Domestic – Farmstead	18th-20th Century	Not Eligible	Berger III
44CE0558	EOD Expansion	Domestic – Farmstead	19th/20th Century	Not Eligible	Berger III
44CE0559	EOD Expansion	Domestic – Farmstead	19th/20th Century	Not Eligible	Berger III
44CE0560	EOD Expansion	Domestic – Farmstead	19th/20th Century	Not Eligible	Berger III
44CE0561	EOD Expansion	Artifact Scatter	Unknown Prehistoric	Not Eligible	Berger III
44CE0562	EOD Expansion	Domestic – Farmstead	19th/20th Century	Not Eligible	Berger III

ELPA – Eligible for the purposes of a program alternative

Berger I= Moore et al. 2007
Berger II=Wade et al. 2007
Berger III=Gregory 2008
FAPH CRM I=Mullin 2007
FAPH CRM II=Mullin 2008
Versar =Knepper et al. 2007

APPENDIX E

National Environmental Policy Act

National Environmental Policy Act of 1969 (as amended)
(42 U.S.C. 4321-4347)

The National Environmental Policy Act of 1969, as amended

(Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982)

An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Environmental Policy Act of 1969."

Purpose

Sec. 2 [42 USC § 4321].

The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

CONGRESSIONAL DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

Sec. 101 [42 USC § 4331].

(a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density

urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may --

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

4. preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;

5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

6. enhance the quality of renewable resources and approach the

maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Sec. 102 [42 USC § 4332].

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall --

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on --

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of

man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

(i) the State agency or official has statewide jurisdiction and has the responsibility for such action,

(ii) the responsible Federal official furnishes guidance and participates in such preparation,

(iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and

(iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have

significant impacts upon such State or affected Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this Act; and further, this subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdiction.

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) assist the Council on Environmental Quality established by title II of this Act.

Sec. 103 [42 USC § 4333].

All agencies of the Federal Government shall review their present

statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

Sec. 104 [42 USC § 4334].

Nothing in section 102 [42 USC § 4332] or 103 [42 USC § 4333] shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

Sec. 105 [42 USC § 4335].

The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Sec. 201 [42 USC § 4341].

The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban an rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the

Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Sec. 202 [42 USC § 4342].

There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

Sec. 203 [42 USC § 4343].

(a) The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

(b) Notwithstanding section 1342 of Title 31, the Council may accept and employ voluntary and uncompensated services in furtherance of the purposes of the Council.

Sec. 204 [42 USC § 4344].

It shall be the duty and function of the Council --

1. to assist and advise the President in the preparation of the Environmental Quality Report required by section 201 [42 USC § 4341] of this title;

2. to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

3. to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;

4. to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

5. to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

6. to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

7. to report at least once each year to the President on the state and condition of the environment; and

8. to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

Sec. 205 [42 USC § 4345].

In exercising its powers, functions, and duties under this Act, the Council shall --

1. consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order No. 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and

2. utilize, to the fullest extent possible, the services, facilities and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

Sec. 206 [42 USC § 4346].

Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates [5 USC § 5313]. The other members of the Council shall be compensated at the rate provided for Level IV of the Executive Schedule Pay Rates [5 USC § 5315].

Sec. 207 [42 USC § 4346a].

The Council may accept reimbursements from any private nonprofit organization or from any department, agency, or instrumentality of the Federal Government, any State, or local government, for the

reasonable travel expenses incurred by an officer or employee of the Council in connection with his attendance at any conference, seminar, or similar meeting conducted for the benefit of the Council.

Sec. 208 [42 USC § 4346b].

The Council may make expenditures in support of its international activities, including expenditures for: (1) international travel; (2) activities in implementation of international agreements; and (3) the support of international exchange programs in the United States and in foreign countries.

Sec. 209 [42 USC § 4347].

There are authorized to be appropriated to carry out the provisions of this chapter not to exceed $300,000 for fiscal year 1970, $700,000 for fiscal year 1971, and $1,000,000 for each fiscal year thereafter.

The Environmental Quality Improvement Act, as amended (Pub. L. No. 91- 224, Title II, April 3, 1970; Pub. L. No. 97-258, September 13, 1982; and Pub. L. No. 98-581, October 30, 1984.

42 USC § 4372.

(a) There is established in the Executive Office of the President an office to be known as the Office of Environmental Quality (hereafter in this chapter referred to as the "Office"). The Chairman of the Council on Environmental Quality established by Public Law 91-190 shall be the Director of the Office. There shall be in the Office a Deputy Director who shall be appointed by the President, by and with the advice and consent of the Senate.

(b) The compensation of the Deputy Director shall be fixed by the President at a rate not in excess of the annual rate of compensation payable to the Deputy Director of the Office of Management and Budget.

(c) The Director is authorized to employ such officers and

employees (including experts and consultants) as may be necessary to enable the Office to carry out its functions ;under this chapter and Public Law 91-190, except that he may employ no more than ten specialists and other experts without regard to the provisions of Title 5, governing appointments in the competitive service, and pay such specialists and experts without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, but no such specialist or expert shall be paid at a rate in excess of the maximum rate for GS-18 of the General Schedule under section 5332 of Title 5.

(d) In carrying out his functions the Director shall assist and advise the President on policies and programs of the Federal Government affecting environmental quality by --

1. providing the professional and administrative staff and support for the Council on Environmental Quality established by Public Law 91- 190;

2. assisting the Federal agencies and departments in appraising the effectiveness of existing and proposed facilities, programs, policies, and activities of the Federal Government, and those specific major projects designated by the President which do not require individual project authorization by Congress, which affect environmental quality;

3. reviewing the adequacy of existing systems for monitoring and predicting environmental changes in order to achieve effective coverage and efficient use of research facilities and other resources;

4. promoting the advancement of scientific knowledge of the effects of actions and technology on the environment and encouraging the development of the means to prevent or reduce adverse effects that endanger the health and well-being of man;

5. assisting in coordinating among the Federal departments and agencies those programs and activities which affect, protect, and improve environmental quality;

6. assisting the Federal departments and agencies in the development and interrelationship of environmental quality criteria and standards established throughout the Federal Government;

7. collecting, collating, analyzing, and interpreting data and information on environmental quality, ecological research, and evaluation.

(e) The Director is authorized to contract with public or private agencies, institutions, and organizations and with individuals without regard to section 3324(a) and (b) of Title 31 and section 5 of Title 41 in carrying out his functions.

42 USC § 4373. Each Environmental Quality Report required by Public Law 91-190 shall, upon transmittal to Congress, be referred to each standing committee having jurisdiction over any part of the subject matter of the Report.

42 USC § 4374. There are hereby authorized to be appropriated for the operations of the Office of Environmental Quality and the Council on Environmental Quality not to exceed the following sums for the following fiscal years which sums are in addition to those contained in Public Law 91- 190:

(a) $2,126,000 for the fiscal year ending September 30, 1979.

(b) $3,000,000 for the fiscal years ending September 30, 1980, and September 30, 1981.

(c) $44,000 for the fiscal years ending September 30, 1982, 1983, and 1984.

(d) $480,000 for each of the fiscal years ending September 30, 1985 and 1986.

42 USC § 4375.

(a) There is established an Office of Environmental Quality Management Fund (hereinafter referred to as the "Fund") to receive advance payments from other agencies or accounts that may be used solely to finance --

1. study contracts that are jointly sponsored by the Office and one or more other Federal agencies; and

2. Federal interagency environmental projects (including task forces) in which the Office participates.

(b) Any study contract or project that is to be financed under subsection (a) of this section may be initiated only with the approval of the Director.

(c) The Director shall promulgate regulations setting forth policies and procedures for operation of the Fund.

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Environmental Analysis of Army Actions
(32 CFR Part 651)

SUBCHAPTER K—ENVIRONMENTAL QUALITY

PART 651—ENVIRONMENTAL ANALYSIS OF ARMY ACTIONS (AR 200–2)

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Subpart A—Introduction

§ 651.1 Purpose.

(a) This part implements the National Environmental Policy Act of 1969 (NEPA), setting forth the Army's policies and responsibilities for the early integration of environmental considerations into planning and decision-making.

(b) This part requires environmental analysis of Army actions affecting human health and the environment; providing criteria and guidance on actions normally requiring Environmental Assessments (EAs) or Environmental Impact Statements (EISs), and listing Army actions that are categorically excluded from such requirements, provided specific criteria are met.

(c) This part supplements the regulations of the Council on Environmental Quality (CEQ) in the Code of Federal Regulations (CFR) (40 CFR parts 1500–1508) for Army actions, and must be read in conjunction with them.

(d) All Army acquisition programs must use this part in conjunction with Department of Defense (DOD) 5000.2–R (Mandatory Procedures for Major Defense Acquisition Programs and Major Automated Information Systems).

(e) This part applies to actions of the Active Army and Army Reserve, to functions of the Army National Guard (ARNG) involving federal funding, and to functions for which the Army is the DOD executive agent. It does not apply to Civil Works functions of the US Army Corps of Engineers (USACE) or to combat or combat-related activities in a combat or hostile fire zone. Operations Other Than War (OOTW) or Stability and Support Operations (SASO) are subject to the provisions of this part as specified in subpart H of this part. This part applies to relevant actions within the United States, which is defined as all States; the District of Columbia; territories and possessions of the United States; and all waters and airspace subject to the territorial jurisdiction of the United States. The territories and possessions of the United States include the Virgin Islands, American Samoa, Wake Island, Midway Island, Guam, Palmyra Island, Johnston Atoll, Navassa Island, and Kingman Reef. This regulation also applies to actions in the Commonwealths of Puerto Rico and the Northern Marianas, the Republic of the Marshall Islands, and the Federated States of Micronesia and Palau (Republic of Belau). In addition, this part addresses the responsibility of the Army for the assessment and consideration of environmental effects for peacetime SASO operations worldwide. Throughout this part, emphasis is placed upon quality analysis of environmental effects, not the production of documents. Documentation is necessary to present and staff results of the analyses, but the objective of NEPA and Army NEPA policy is quality analysis in support of the Army decision maker. The term ''analysis'' also includes any required documentation to support the analysis, coordinate NEPA requirements, and inform the public and the decision maker.

§ 651.2 References.

Required and related publications and referenced forms are listed in Appendix A of this part.

§ 651.3 Explanation of abbreviations and terms.

Abbreviations and special terms used in this part are explained in the glossary in Appendix F of this part.

§ 651.4 Responsibilities.

(a) *The Assistant Secretary of the Army (Installations and Environment) (ASA(I&E))*. ASA(I&E) is designated by the Secretary of the Army (SA) as the Army's responsible official for NEPA policy, guidance, and oversight. In meeting these responsibilities, ASA(I&E) will:

(1) Maintain liaison with the Office of the Secretary of Defense (OSD), Office of Management and Budget (OMB), Council on Environmental Quality (CEQ), Environmental Protection Agency (EPA), Congressional oversight committees, and other federal, state, and local agencies on Army environmental policies.

(2) Review NEPA training at all levels of the Army, including curricula at Army, DOD, other service, other agency, and private institutions; and ensure adequacy of NEPA training of Army personnel at all levels.

(3) Establish an Army library for EAs and EISs, which will serve as:

(i) A means to ascertain adherence to the policies set forth in this part, as well as potential process improvements; and

(ii) A technical resource for proponents and preparers of NEPA documentation.

(b) The *Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(AL&T))*. ASA(AL&T) will:

(1) Under oversight of the ASA(I&E), execute those NEPA policy provisions contained herein that pertain to the ASA(AL&T) responsibilities in the Army materiel development process, as described in Army Regulation (AR) 70–1, Army Acquisition Policy.

(2) Prepare policy for the Army Acquisition Executive (AAE) to develop and administer a process of review and approval of environmental analyses during the Army materiel development process.

(3) Prepare research, development, test, and evaluation (RDT&E) and procurement budget justifications to support Materiel Developer (MATDEV) implementation of NEPA provisions.

(c) *The Army Acquisition Executive (AEE)*. The AAE will, under the Army oversight responsibilities assigned to ASA(I&E):

(1) Administer a process to:

(i) Execute all those NEPA policy provisions contained herein that pertain to all acquisition category (ACAT) programs, projects, and products;

(ii) Ensure that Milestone Decision Authorities (MDAs), at all levels, assess the effectiveness of environmental analysis in all phases of the system acquisition process, including legal review of these requirements;

(iii) Establish resource requirements and program, plan, and budget exhibits for inclusion in annual budget decisions;

(iv) Review and approve NEPA documentation at appropriate times during materiel development, in conjunction with acquisition phases and milestone reviews as established in the Acquisition Strategy; and

(v) Establish NEPA responsibility and awareness training requirements for Army Acquisition Corps personnel.

(2) Ensure Program Executive Officers (PEOs), Deputies for Systems Acquisition (DSAs), and direct-reporting Program Managers (PMs) will:

(i) Supervise assigned programs, projects, and products to ensure that each environmental analysis addresses all applicable environmental laws, executive orders, and regulations.

(ii) Ensure that environmental considerations are integrated into system acquisition plans/strategies, Test and Evaluation Master Plans (TEMPs) and Materiel Fielding Plans, Demilitarization/Disposal Plans, system engineering reviews/Integrated Process Team (IPT) processes, and Overarching Integrated Process Team (OIPT) milestone review processes.

(iii) Coordinate environmental analysis with appropriate organizations to include environmental offices such as Army Acquisition Pollution Prevention Support Office (AAPPSO) and U.S. Army Environmental Center (USAEC) and operational offices and organizations such as testers (developmental/operational), producers, users, and disposal offices.

(3) Ensure Program, Project, Product Managers, and other MATDEVs will:

(i) Initiate the environmental analysis process prescribed herein upon receiving the project office charter to commence the materiel development process, and designate a NEPA point of contact (POC) to the Director of Environmental Programs (DEP).

(ii) Integrate the system's environmental analysis (including NEPA) into the system acquisition strategy, milestone review planning, system engineering, and preliminary design, critical design, and production readiness reviews.

(iii) Apply policies and procedures set forth in this part to programs and actions within their organizational and staff responsibility.

(iv) Coordinate with installation managers and incorporate comments and positions of others (such as the Assistant Chief of Staff for Installation Management (ACSIM) and environmental offices of the development or operational testers, producers, users, and disposers) into the decision-making process.

(v) Initiate the analysis of environmental considerations, assess the environmental consequences of proposed programs and projects, and undergo environmental analysis, as appropriate.

(vi) Maintain the administrative record of the program's environmental analysis in accordance with this part.

(vii) Coordinate with local citizens and other affected parties, and incorporate appropriate comments into NEPA analyses.

(viii) Coordinate with ASA(I&E) when NEPA analyses for actions under AAE purview require publication in the FEDERAL REGISTER (FR).

(d) *The Deputy Chief of Staff for Operations and Plans (DCSOPS).* DCSOPS is the proponent for Training and Operations activities. DCSOPS will ensure that Major Army Commands (MACOMs) support and/or perform, as appropriate, NEPA analysis of fielding issues related to specific local or regional concerns when reviewing Materiel Fielding Plans prepared by Combat Developers (CBTDEVs) or MATDEVs. This duty will include the coordination of CBTDEV and MATDEV information with appropriate MACOMs and Deputy Chief of Staff for Logistics (DCSLOG).

(e) *The Assistant Chief of Staff for Installation Management (ACSIM).* ACSIM is responsible for coordinating, monitoring, and evaluating NEPA activities within the Army. The Environmental Programs Directorate is the Army Staff (ARSTAF) POC for environmental matters and serves as the Army staff advocate for the Army NEPA requirements contained in this part. The ACSIM will:

(1) Encourage environmental responsibility and awareness among Army personnel to most effectively implement the spirit of NEPA.

(2) Establish and maintain the capability (personnel and other resources) to comply with the requirements of this part. This responsibility includes the provision of an adequately trained and educated staff to ensure adherence to the policies and procedures specified by this part.

(f) *The Director of Environmental Programs.* The director, with support of the U.S. Army Environmental Center, and under the ACSIM, will:

(1) Advise Army agencies in the preparation of NEPA analyses, upon request.

(2) Review, as requested, NEPA analyses submitted by the Army, other DOD components, and other federal agencies.

(3) Monitor proposed Army policy and program documents that have environmental implications to determine compliance with NEPA requirements and ensure integration of environmental considerations into decision-making and adaptive management processes.

(4) Propose and develop Army NEPA guidance pursuant to policies formulated by ASA(I&E).

(5) Advise project proponents regarding support and defense of Army NEPA requirements through the budgeting process.

(6) Provide NEPA process oversight, in support of ASA(I&E), and, as appropriate, technical review of NEPA documentation.

(7) Oversee proponent implementation and execution of NEPA requirements, and develop and execute programs and initiatives to address problem areas.

(8) Assist the ASA(I&E) in the evaluation of formal requests for the delegation of NEPA responsibilities on a case-by-case basis. This assistance will include:

(i) Determination of technical sufficiency of the description of proposed action and alternatives (DOPAA) when submitted as part of the formal delegation request (§ 651.7).

(ii) Coordination of the action with the MACOM requesting the delegation.

(9) Periodically provide ASA(I&E) with a summary analysis and recommendations on needed improvements in policy and guidance to Army activities concerning NEPA implementation, in support of ASA(I&E) oversight responsibilities.

(10) Advise headquarters proponents on how to secure funding and develop programmatic NEPA analyses to address actions that are Army-wide, where a programmatic approach would be appropriate to address the action.

(11) Designate a NEPA PM to coordinate the Army NEPA program and notify ASA(I&E) of the designation.

(12) Maintain manuals and guidance for NEPA analyses for major Army programs in hard copy and make this guidance available on the World Wide Web (WWW) and other electronic means.

(13) Maintain a record of NEPA POCs in the Army, as provided by the MACOMs and other Army agencies.

(14) Forward electronic copies of all EAs, and EISs to AEC to ensure inclusion in the Army NEPA library; and ensure those same documents are forwarded to the Defense Technical Information Center (DTIC).

(g) *Heads of Headquarters, Army agencies.* The heads of headquarters, Army agencies will:

(1) Apply policies and procedures herein to programs and actions within their staff responsibility except for state-funded operations of the Army National Guard (ARNG).

(2) Task the appropriate component with preparation of NEPA analyses and documentation.

(3) Initiate the preparation of necessary NEPA analyses, assess proposed programs and projects to determine their environmental consequences, and initiate NEPA documentation for circulation and review along with other planning or decision-making documents. These other documents include, as appropriate, completed DD Form 1391 (Military Construction Project Data), Case Study and Justification Folders, Acquisition Strategies, and other documents proposing or supporting proposed programs or projects.

(4) Coordinate appropriate NEPA analyses with ARSTAF agencies.

(5) Designate, record, and report to the DEP the identity of the agency's single POC for NEPA considerations.

(6) Assist in the review of NEPA documentation prepared by DOD and other Army or federal agencies, as requested.

(7) Coordinate proposed directives, instructions, regulations, and major policy publications that have environmental implications with the DEP.

(8) Maintain the capability (personnel and other resources) to comply with the requirements of this part and include provisions for NEPA requirements through the Program Planning and Budget Execution System (PPBES) process.

(h) *The Assistant Secretary of the Army for Financial Management (ASA(FM)).* ASA(FM) will establish procedures to ensure that NEPA requirements are supported in annual authorization requests.

(i) *The Judge Advocate General (TJAG).* TJAG will provide legal advice to the Army Staff and assistance in NEPA interpretation, federal implementing regulations, and other applicable legal authority; determine the legal sufficiency for Army NEPA documentation; and interface with the Army General Counsel (GC) and the Department of Justice on NEPA-related litigation.

(j) *The Army General Counsel.* The Army General Counsel will provide legal advice to the Secretary of the Army on all environmental matters, to include interpretation and compliance with NEPA and federal implementing regulations and other applicable legal authority.

(k) *The Surgeon General.* The Surgeon General will provide technical expertise and guidance to NEPA proponents in the Army, as requested, in order to assess public health, industrial hygiene, and other health aspects of proposed programs and projects.

(l) *The Chief, Public Affairs.* The Chief, Public Affairs will:

(1) Provide guidance on issuing public announcements such as Findings of No Significant Impact (FNSIs), Notices of Intent (NOIs), scoping procedures, Notices of Availability (NOAs), and other public involvement activities; and establish Army procedures for issuing/announcing releases in the FR.

(2) Review and coordinate planned announcements on actions of national interest with appropriate ARSTAF elements and the Office of the Assistant Secretary of Defense for Public Affairs (OASD(PA)).

(3) Assist in the issuance of appropriate press releases to coincide with the publication of notices in the FR.

(4) Provide assistance to MACOM and installation Public Affairs Officers (PAOs) regarding the development and release of public involvement materials.

(m) *The Chief of Legislative Liaison.* The Chief of Legislative Liaison will notify Members of Congress of impending proposed actions of national concern or interest. The Chief will:

(1) Provide guidance to proponents at all levels on issuing Congressional notifications on actions of national concern or interest.

(2) Review planned congressional notifications on actions of national concern or interest.

(3) Prior to (and in concert with) the issuance of press releases and publications in the FR, assist in the issuance of congressional notifications on actions of national concern or interest.

(n) *Commanders of MACOMs, the Director of the Army National Guard, and the U.S. Army Reserve Commander*. Commanders of MACOMs, the Director of the Army National Guard, and the U.S. Army Reserve Commander will:

(1) Monitor proposed actions and programs within their commands to ensure compliance with this part, including mitigation monitoring, utilizing Environmental Compliance Assessment System (ECAS), Installation Status Report (ISR), or other mechanisms.

(2) Task the proponent of the proposed action with funding and preparation of NEPA documentation and involvement of the public.

(3) Ensure that any proponent at the MACOM level initiates the required environmental analysis early in the planning process, plans the preparation of necessary NEPA documentation, and uses the analysis to aid in the final decision.

(4) Assist in the review of NEPA documentation prepared by DOD and other Army or federal agencies, as requested.

(5) Maintain official record copies of all NEPA documentation for which they are the proponent, and file electronic copies of those EAs, and final EISs with AEC.

(6) Provide coordination with Headquarters, Department of the Army (HQDA) for proposed actions that have either significant impacts requiring an EIS or are of national interest. This process will require defining the purpose and need for the action, alternatives to be considered, and other information, as requested by HQDA. It also must occur early in the process and prior to an irretrievable commitment of resources that will prejudice the ultimate decision or selection of alternatives (40 CFR 1506.1). When delegated signature authority by HQDA, this process also includes the responsibility for complying with this part and associated Army environmental policy.

(7) Approve and forward NEPA documentation, as appropriate, for actions under their purview.

(8) In the case of the Director, ARNG, or his designee, approve all federal NEPA documentation prepared by all ARNG activities.

(9) Ensure environmental information received from MATDEVs is provided to appropriate field sites to support site-specific environmental analysis and NEPA requirements.

(10) Designate a NEPA PM to coordinate the MACOM NEPA program and maintain quality control of NEPA analyses and documentation that are processed through the command.

(11) Budget for resources to maintain oversight of NEPA and this part.

(o) *Installation Commanders; Commanders of U.S. Army Reserve Support Commands; and The Adjutant Generals of the Army National Guard*. Installation Commanders; Commanders of U.S. Army Reserve Support Commands; and The Adjutant Generals of the Army National Guard will:

(1) Establish an installation (command organization) NEPA program and evaluate its performance through the Environmental Quality Control Committee (EQCC) as required by AR 200–1, Environmental Protection and Enhancement.

(2) Designate a NEPA POC to coordinate and manage the installation's (command organization's) NEPA program, integrating it into all activities and programs at the installation. The installation commander will notify the MACOM of the designation.

(3) Establish a process that ensures coordination with the MACOM, other installation staff elements (to include PAOs and tenants) and others to incorporate NEPA requirements early in the planning of projects and activities.

(4) Ensure that actions subject to NEPA are coordinated with appropriate installation organizations responsible for such activities as master planning, natural and cultural resources management, or other installation activities and programs.

(5) Ensure that funding for environmental analysis is prioritized and planned, or otherwise arranged by the proponent, and that preparation of NEPA analyses, including the involvement of the public, is consistent with the requirements of this part.

(6) Approve NEPA analyses for actions under their purview. The Adjutant General will review and endorse documents and forward to the NGB for final approval.

(7) Ensure the proponent initiates the NEPA analysis of environmental consequences and assesses the environmental consequences of proposed programs and projects early in the planning process.

(8) Assist in the review of NEPA analyses affecting the installation or activity, and those prepared by DOD and other Army or federal agencies, as requested.

(9) Provide information through the chain of command on proposed actions of national interest to higher headquarters prior to initiation of NEPA documentation.

(10) Maintain official record copies of all NEPA documentation for which they are the proponent and forward electronic copies of those final EISs and EAs through the MACOM to AEC.

(11) Ensure that the installation proponents initiate required environmental analyses early in the planning process and plan the preparation of necessary NEPA documentation.

(12) Ensure NEPA awareness and/or training is provided for professional staff, installation-level proponents, and document reviewers (for example, master planning, range control, etc.).

(13) Solicit support from MACOMs, CBTDEVs, and MATDEVs, as appropriate, in preparing site-specific environmental analysis.

(14) Ensure that local citizens are aware of and, where appropriate, involved in NEPA analyses, and that public comments are obtained and considered in decisions regarding proposals.

(15) Use environmental impact analyses to determine the best alternatives from an environmental perspective, and to ensure that these determinations are part of the Army decision process.

(p) *Environmental Officers.* Environmental officers (at the Installation, MACOM, and Army activity level) shall, under the authority of the Installation Commander; Commanders of U.S. Army Reserves Regional Support Commands; and Director NGB-ARE (Installation Commanders):

(1) Represent the Installation, MACOM, or activity Commander on NEPA matters.

(2) Advise the proponent on the selection, preparation, and completion of NEPA analyses and documentation. This approach will include oversight on behalf of the proponent to ensure adequacy and support for the proposed action, including mitigation monitoring.

(3) Develop and publish local guidance and procedures for use by NEPA proponents to ensure that NEPA documentation is procedurally and technically correct. (This includes approval of Records of Environmental Consideration (RECs).)

(4) Identify any additional environmental information needed to support informed Army decision-making.

(5) Budget for resources to maintain oversight with NEPA and this part.

(6) Assist proponents, as necessary, to identify issues, impacts, and possible alternatives and/or mitigations relevant to specific proposed actions.

(7) Assist, as required, in monitoring to ensure that specified mitigation measures in NEPA analyses are accomplished. This monitoring includes assessing the effectiveness of the mitigations.

(8) Ensure completion of agency and community coordination.

(q) *Proponents.* Proponents at all levels will:

(1) Identify the proposed action, the purpose and need, and reasonable alternatives for accomplishing the action.

(2) Fund and prepare NEPA analyses and documentation for their proposed actions. This responsibility will include negotiation for matrix support and services outside the chain of command when additional expertise is needed to prepare, review, or otherwise support the development and approval of NEPA analyses and documentation. These NEPA costs may be borne by successful contract offerors.

(3) Ensure accuracy and adequacy of NEPA analyses, regardless of the author. This work includes incorporation of comments from appropriate servicing Army environmental and legal staffs.

(4) Ensure adequate opportunities for public review and comment on proposed NEPA actions, in accordance with applicable laws and EOs as discussed in § 651.14 (e). This step includes the incorporation of public and agency input into the decision-making process.

(5) Ensure that NEPA analysis is prepared and staffed sufficiently to comply with the intent and requirements of federal laws and Army policy. These documents will provide enough information to ensure that Army decision makers (at all levels) are informed in the performance of their duties (40 CFR 1501.2, 1505.1). This result requires coordination and resolution of important issues developed during the environmental analysis process, especially when the proposed action may involve significant environmental impacts, and includes the incorporation of comments from an affected installation's environmental office in recommendations made to decision makers.

(6) Adequately fund and implement the decision including all mitigation actions and effectiveness monitoring.

(7) Prepare and maintain the official record copy of all NEPA analyses and documentation for which they are the proponent. This step will include the provision of electronic copies of all EAs, final EISs, and Records of Decision (RODs), through their chain of command, to AEC, and forwarding of those same documents to the Defense Technical Information Center (DTIC) as part of their public distribution procedures. In addition, copies of all EAs and FNSIs (in electronic copy) will be provided to ODEP. A copy of the documentation should be maintained for six years after signature of the FNSI/ROD.

(8) Maintain the administrative record for the environmental analysis performed. The administrative record shall be retained by the proponent for a period of six years after completion of the action, unless the action is controversial or of a nature that warrants keeping it longer. The administrative record includes all documents and information used to make the decision. This administrative record should contain, but is not limited to, the following types of records:

(i) Technical information used to develop the description of the proposed action, purpose and need, and the range of alternatives.

(ii) Studies and inventories of affected environmental baselines.

(iii) Correspondence with regulatory agencies.

(iv) Correspondence with, and comments from, private citizens, Native American tribes, Alaskan Natives, local governments, and other individuals and agencies contacted during public involvement.

(v) Maps used in baseline studies.

(vi) Maps and graphics prepared for use in the analysis.

(vii) Affidavits of publications and transcripts of any public participation.

(viii) Other written records that document the preparation of the NEPA analysis.

(ix) An index or table of contents for the administrative record.

(9) Identify other requirements that can be integrated and coordinated within the NEPA process. After doing so, the proponent should establish a strategy for concurrent, not sequential, compliance; sharing similar data, studies, and analyses; and consolidating opportunities for public participation. Examples of relevant statutory and regulatory processes are given in § 651.14 (e).

(10) Identify and coordinate with public agencies, private organizations, and individuals that may have an interest in or jurisdiction over a resource that might be impacted. Coordination should be accomplished in cooperation with the Installation Environmental Offices in order to maintain contact and continuity with the regulatory and environmental communities. Applicable agencies include, but are not limited to:

(i) State Historic Preservation Officer.

(ii) Tribal Historic Preservation Officer.

(iii) U.S. Fish and Wildlife Service.

(iv) Regional offices of the EPA.

(v) State agencies charged with protection of the environment, natural resources, and fish and wildlife.

(vi) USACE Civil Works regulatory functions, including Clean Water Act, Section 404, permitting and wetland protection.

(vii) National Marine Fisheries Service.

(viii) Local agencies and/or governing bodies.

(ix) Environmental interest groups.

(x) Minority, low-income, and disabled populations.

(xi) Tribal governments.

(xii) Existing advisory groups (for example, Restoration Advisory Boards, Citizens Advisory Commissions, etc.).

(11) Identify and coordinate, in concert with environmental offices, proposed actions and supporting environmental analyses with local and/or regional ecosystem management initiatives such as the Mojave Desert Ecosystem Management Initiative or the Chesapeake Bay Initiative.

(12) Review Army policies, including AR 200–1 (Environmental Protection and Enhancement), AR 200–3 (Natural Resources—Land, Forest, and Wildlife Management), and AR 200–4 (Cultural Resources Management) to ensure that the proposed action is coordinated with appropriate resource managers, operators, and planners, and is consistent with existing Army plans and their supporting NEPA analyses.

(13) Identify potential impacts to (and consult with as appropriate) American Indian, Alaskan Native, or Native Hawaiian lands, resources, or cultures (for example, sacred sites, traditional cultural properties, treaty rights, subsistence hunting or fishing rights, or cultural items subject to the Native American Graves Protection and Repatriation Act (NAGPRA)). All consultation shall be conducted on a Government-to-Government basis in accordance with the Presidential Memorandum on Government-to-Government Relations with Tribal Governments (April 29, 1994) (3 CFR, 1994 Comp., p. 1007) and AR 200–4 (Cultural Resources Management). Proponents shall consider, as appropriate, executing Memoranda of Agreements (MOAs) with interested Native American groups and tribes to facilitate timely and effective participation in the NEPA process. These agreements should be accomplished in cooperation with Installation Environmental Offices in order to maintain contact and continuity with the regulatory and environmental communities.

(14) Review NEPA documentation that relies upon mitigations that were not accomplished to determine if the NEPA analysis needs to be rewritten or updated. Such an update is required if the unaccomplished mitigation was used to support a FNSI. Additional public notice/involvement must accompany any rewrites.

(r) *The Commander, U.S. Army Training and Doctrine Command (TRADOC).* The Commander, TRADOC will:

(1) Ensure that NEPA requirements are understood and options incorporated in the Officer Foundation Standards (OFS).

(2) Integrate environmental considerations into doctrine, training, leader development, organization, materiel, and soldier (DTLOMS) processes.

(3) Include environmental expert representation on all Integrated Concept Teams (ICTs) involved in requirements determinations.

(4) Ensure that TRADOC CBTDEVs retain and transfer any environmental analysis or related data (such as alternatives analysis) to the MATDEV upon approval of a materiel need. This information and data will serve as the basis for the MATDEV's Acquisition Strategy and subsequent NEPA analyses.

(5) Ensure that environmental considerations are incorporated into the Mission Needs Statements (MNSs) and Operational Requirements Documents (ORDs).

§651.5 Army policies.

(a) NEPA establishes broad federal policies and goals for the protection of the environment and provides a flexible framework for balancing the need for environmental quality with other essential societal functions, including national defense. The Army is expected to manage those aspects of the environment affected by Army activities; comprehensively integrating environmental policy objectives into planning and decision-making. Meaningful integration of environmental considerations is accomplished by efficiently and effectively informing Army planners and decision makers. The Army will use the flexibility of NEPA to ensure implementation in the most cost-efficient and effective manner. The

depth of analyses and length of documents will be proportionate to the nature and scope of the action, the complexity and level of anticipated effects on important environmental resources, and the capacity of Army decisions to influence those effects in a productive, meaningful way from the standpoint of environmental quality.

(b) The Army will actively incorporate environmental considerations into informed decision-making, in a manner consistent with NEPA. Communication, cooperation, and, as appropriate, collaboration between government and extra-government entities is an integral part of the NEPA process. Army proponents, participants, reviewers, and approvers will balance environmental concerns with mission requirements, technical requirements, economic feasibility, and long-term sustainability of Army operations. While carrying out its mission, the Army will also encourage the wise stewardship of natural and cultural resources for future generations. Decision makers will be cognizant of the impacts of their decisions on cultural resources, soils, forests, rangelands, water and air quality, fish and wildlife, and other natural resources under their stewardship, and, as appropriate, in the context of regional ecosystems.

(c) Environmental analyses will reflect appropriate consideration of nonstatutory environmental issues identified by federal and DOD orders, directives, and policy guidance. Some examples are in § 651.14 (e). Potential issues will be discussed and critically evaluated during scoping and other public involvement processes.

(d) The Army will continually take steps to ensure that the NEPA program is effective and efficient. Effectiveness of the program will be determined by the degree to which environmental considerations are included on a par with the military mission in project planning and decision-making. Efficiency will be promoted through the following:

(1) Awareness and involvement of the proponent in the NEPA process.

(2) NEPA technical and awareness training, as appropriate, at all decision levels of the Army.

(3) Where appropriate, the use of programmatic analyses and tiering to ensure consideration at the appropriate decision levels, elimination of repetitive discussion, consideration of cumulative effects, and focus on issues that are important and appropriate for discussion at each level.

(4) Use of the scoping and public involvement processes to limit the analysis of issues to those which are of interest to the public and/or important to the decision-making at hand.

(5) Elimination of needless paperwork by focusing documents on the major environmental issues affecting those decisions.

(6) Early integration of the NEPA process into all aspects of Army planning, so as to prevent disruption in the decision-making process; ensuring that NEPA personnel function as team members, supporting the Army planning process and sound Army decision-making. All NEPA analyses will be prepared by an interdisciplinary team.

(7) Partnering or coordinating with agencies, organizations, and individuals whose specialized expertise will improve the NEPA process.

(8) Oversight of the NEPA program to ensure continuous process improvement. NEPA requirements will be integrated into other environmental reporting requirements, such as the ISR.

(9) Clear and concise communication of data, documentation, and information relevant to NEPA analysis and documentation.

(10) Environmental analysis of strategic plans based on:

(i) Scoping thoroughly with agencies, organizations, and the public;

(ii) Setting specific goals for important environmental resources;

(iii) Monitoring of impacts to these resources;

(iv) Reporting of monitoring results to the public; and

(v) Adaptive management of Army operations to stay on course with the strategic plan's specific resource goals.

(11) Responsive staffing through HQDA and the Secretariat. To the extent possible, documents and transmittal packages will be acted upon within 30 calendar days of receipt by each office through which they are staffed. These actions will be approved

and transmitted, if the subject material is adequate; or returned with comment in those cases where additional work is required. Cases where these policies are violated should be identified to ASA (I&E) for resolution.

(e) Army leadership and commanders at all levels are required to:

(1) Establish and maintain the capability (personnel and other resources) to ensure adherence to the policies and procedures specified by this part. This should include the use of the PPBES, EPR, and other established resourcing processes. This capability can be provided through the use of a given mechanism or mix of mechanisms (contracts, matrix support, and full-time permanent (FTP) staff), but sufficient FTP staff involvement is required to ensure:

(i) Army cognizance of the analyses and decisions being made; and

(ii) Sufficient institutional knowledge of the NEPA analysis to ensure that Army NEPA responsibilities (pre- and post-decision) are met. Every person preparing, implementing, supervising, and managing projects involving NEPA analysis must be familiar with the requirements of NEPA and the provisions of this part.

(2) Ensure environmental responsibility and awareness among personnel to most effectively implement the spirit of NEPA. All personnel who are engaged in any activity or combination of activities that significantly affect the quality of the human environment will be aware of their NEPA responsibility. Only through alertness, foresight, notification through the chain of command, and training and education will NEPA goals be realized.

(f) The worldwide, transboundary, and long-range character of environmental problems will be recognized, and, where consistent with national security requirements and U.S. foreign policy, appropriate support will be given to initiatives, resolutions, and programs designed to maximize international cooperation in protecting the quality of the world human and natural environment. Consideration of the environment for Army decisions involving activities outside the United States (see §651.1(e)) will be accomplished pursuant to Executive Order 12114 (Environmental Effects Abroad of Major Federal Actions, 4 January 1979), host country final governing standards, DOD Directive (DODD) 6050.7 (Environmental Effects Abroad of Major DOD Actions), DOD Instructions (DODIs), and the requirements of this part. An environmental planning and evaluation process will be incorporated into Army actions that may substantially affect the global commons, environments of other nations, or any protected natural or ecological resources of global importance.

(g) Army NEPA documentation must be periodically reviewed for adequacy and completeness in light of changes in project conditions.

(1) Supplemental NEPA documentation is required when:

(i) The Army makes substantial changes in the proposed action that are relevant to environmental concerns; or

(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impact.

(2) This review requires that the proponent merely initiate another ''hard look'' to ascertain the adequacy of the previous analyses and documentation in light of the conditions listed in paragraph (g)(1) of this section. If this review indicates no need for new or supplemental documentation, a REC can be produced in accordance with this part. Proponents are required to periodically review relevant existing NEPA analyses to ascertain the need for supplemental documentation and document this review in a REC format.

(h) Contractors frequently prepare EISs and EAs. To obtain unbiased analyses, contractors must be selected in a manner avoiding any conflict of interest. Therefore, contractors will execute disclosure statements specifying that they have no financial or other interest in the outcome of the project. The contractor's efforts should be closely monitored throughout the contract to ensure an adequate assessment/statement and also avoid extensive, time-consuming, and costly analyses or revisions. Project proponents and NEPA program managers must be continuously informed and involved.

(i) When appropriate, NEPA analyses will reflect review for operations security principles and procedures, described in AR 530–1 (Operations Security (OPSEC)), on the cover sheet or signature page.

(j) Environmental analyses and associated investigations are advanced project planning, and will be funded from sources other than military construction (MILCON) funds. Operations and Maintenance Army (OMA), Operations and Maintenance, Army Reserve (OMAR), and Operations and Maintenance, Army National Guard (OMANG), RDT&E, or other operating funds are the proper sources of funds for such analysis and documentation. Alternative Environmental Compliance Achievement Program (non-ECAP) funds will be identified for NEPA documentation, monitoring, and other required studies as part of the MILCON approval process.

(k) Costs of design and construction mitigation measures required as a direct result of MILCON projects will be paid from MILCON funds, which will be included in the cost estimate and description of work on DD Form 1391, Military Construction Project Data.

(l) Response actions implemented in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Resource Conservation and Recovery Act (RCRA) are not legally subject to NEPA and do not require separate NEPA analysis. As a matter of Army policy, CERCLA and RCRA analysis and documentation should incorporate the values of NEPA and:

(1) Establish the scope of the analysis through full and open public participation;

(2) Analyze all reasonable alternative remedies, evaluating the significance of impacts resulting from the alternatives examined; and

(3) Consider public comments in the selection of the remedy. The decision maker shall ensure that issues involving substantive environmental impacts are addressed by an interdisciplinary team.

(m) MATDEVs, scientists and technologists, and CBTDEVs are responsible for ensuring that their programs comply with NEPA as directed in this part.

(1) Prior to assignment of a MATDEV to plan, execute, and manage a potential acquisition program, CBTDEVs will retain environmental analyses and data from requirements determination activities, and Science and Technology (S&T) organizations will develop and retain data for their technologies. These data will transition to the MATDEV upon assignment to plan, execute, and manage an acquisition program. These data (collected and produced), as well as the decisions made by the CBTDEVs, will serve as a foundation for the environment, safety, and health (ESH) evaluation of the program and the incorporation of program-specific NEPA requirements into the Acquisition Strategy. Programmatic ESH evaluation is considered during the development of the Acquisition Strategy as required by DOD 5000.2–R for all ACAT programs. Programmatic ESH evaluation is not a NEPA document. It is a planning, programming, and budgeting strategy into which the requirements of this part are integrated. Environmental analysis must be a continuous process throughout the materiel development program. During this continuous process, NEPA analysis and documentation may be required to support decision-making prior to any decision that will prejudice the ultimate decision or selection of alternatives (40 CFR 1506.1). In accordance with DOD 5000.2.R, the MATDEV is responsible for environmental analysis of acquisition life-cycle activities (including disposal). Planning to accomplish these responsibilities will be included in the appropriate section of the Acquisition Strategy.

(2) MATDEVs are responsible for the documentation regarding general environmental effects of all aspects of the system (including operation, fielding, and disposal) and the specific effects for all activities for which he/she is the proponent.

(3) MATDEVs will include, in their Acquisition Strategy, provisions for developing and supplementing their NEPA analyses and documentation,

and provide data to support supplemental analyses, as required, throughout the life cycle of the system. The MATDEV will coordinate with ASA (AL&T) or MACOM proponent office, ACSIM, and ASA(I&E), identifying NEPA analyses and documentation needed to support milestone decisions. This requirement will be identified in the Acquisition Strategy and the status will be provided to the ACSIM representative prior to milestone review. The Acquisition Strategy will outline the system-specific plans for NEPA compliance, which will be reviewed and approved by the appropriate MDA and ACSIM. Compliance with this plan will be addressed at Milestone Reviews.

(n) AR 700–142 requires that environmental requirements be met to support materiel fielding. During the development of the Materiel Fielding Plan (MFP), and Materiel Fielding Agreement (MFA), the MATDEV and the materiel receiving command will identify environmental information needed to support fielding decisions. The development of generic system environmental and NEPA analyses for the system under evaluation, including military construction requirements and new equipment training issues, will be the responsibility of the MATDEV. The development of site-specific environmental analyses and NEPA documentation (EAs/EISs), using generic system environmental analyses supplied by the MATDEV, will be the responsibility of the receiving Command.

(o) Army proponents are encouraged to draw upon the special expertise available within the Office of the Surgeon General (OSG) (including the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM)), and USACE District Environmental Staff to identify and evaluate environmental health impacts, and other agencies, such as USAEC, can be used to assess potential environmental impacts). In addition, other special expertise is available in the Army, DOD, other federal agencies, state and local agencies, tribes, and other organizations and individuals. Their participation and assistance is also encouraged.

§651.6 NEPA analysis staffing.

(a) NEPA analyses will be prepared by the proponent using appropriate resources (funds and manpower). The proponent, in coordination with the appropriate NEPA program manager, shall determine what proposal requires NEPA analysis, when to initiate NEPA analysis, and what level of NEPA analysis is initially appropriate. The proponent shall remain intimately involved in determining appropriate milestones, timelines, and inputs required for the successful conduct of the NEPA process, including the use of scoping to define the breadth and depth of analysis required. In cases where the document addresses impacts to an environment whose management is not in the proponents' chain of command (for example, installation management of a range for MATDEV testing or installation management of a fielding location), the proponent shall coordinate the analysis and preparation of the document and identify the resources needed for its preparation and staffing through the command structure of that affected activity.

(b) The approving official is responsible for approving NEPA documentation and ensuring completion of the action, including any mitigation actions needed. The approving official may be an installation commander; or, in the case of combat/materiel development, the MATDEV, MDA, or AAE.

(c) Approving officials may select a lead reviewer for NEPA analysis before approving it. The lead reviewer will determine and assemble the personnel needed for the review process. Funding needed to accomplish the review shall be negotiated with the proponent, if required. Lead reviewer may be an installation EC or a NEPA POC designated by an MDA for a combat/materiel development program.

(d) The most important document is the initial NEPA document (draft EA or draft EIS) being processed. Army reviewers are accountable for ensuring thorough early review of draft NEPA analyses. Any organization that raises new concerns or comments during final staffing will explain why issues were not raised earlier. NEPA analyses requiring public release in the FR will be forwarded to ASA(I&E), through the

chain of command, for review. This includes all EISs and all EAs that are of national interest or concern. The activities needed to support public release will be coordinated with ASA(I&E). Public release will not proceed without ASA(I&E) approval.

(e) Public release of NEPA analyses in the FR should be limited to EISs, or EAs that are environmentally controversial or of national interest or concern. When analyses address actions affecting numerous sites throughout the Continental United States (CONUS), the proponent will carefully evaluate the need for publishing an NOA in the FR, as this requires an extensive review process, as well as supporting documentation alerting EPA and members of Congress of the action. At a minimum, and depending on the proponent's command structure, the following reviews must be accomplished:

(1) The NEPA analysis must be reviewed by the MACOM Legal Counsel or TJAG, ACSIM, ASA(I&E), and Office of General Counsel (OGC).

(2) The supporting documentation must be reviewed by Office of the Chief of Legislative Liaison (OCLL) and Office of the Chief of Public Affairs (OCPA).

(3) Proponents must allow a minimum of 30 days to review the documentation and must allow sufficient time to address comments from these offices prior to publishing the NOA.

(4) The proponent may consider publishing the NOA in local publication resources near each site. Proponents are strongly advised to seek the assistance of the local environmental office and command structure in addressing the need for such notification.

§ 651.7 Delegation of authority for non-acquisition systems.

(a) MACOMs can request delegation authority and responsibility for an EA of national concern or an EIS from ASA(I&E). The proponent, through the appropriate chain of command, and with the concurrence of environmental offices, forwards to HQDA (ODEP) the request to propose, prepare, and finalize an EA and FNSI or EIS through the ROD stage. The request must include, at a minimum, the following:

(1) A description of the purpose and need for the action.

(2) A description of the proposed action and a preliminary list of alternatives to that proposed action, including the ''no action'' alternative. This constitutes the DOPAA.

(3) An explanation of funding requirements, including cost estimates, and how they will be met.

(4) A brief description of potential issues of concern or controversy, including any issues of potential Army-wide impact.

(5) A plan for scoping and public participation.

(6) A timeline, with milestones for the EIS action.

(b) If granted, a formal letter will be provided by ASA(I&E) outlining extent, conditions, and requirements for the NEPA action. Only the ASA(I&E) can delegate this authority and responsibility. When delegated signature authority by HQDA, the MACOM will be responsible for complying with this part and associated Army environmental policy. This delegation, at the discretion of ASA(I&E), can include specific authority and responsibility for coordination and staffing of:

(1) EAs and FNSIs, and associated transmittal packages, as specified in § 651.35(c).

(2) NOIs, Preliminary Draft EISs (PDEISs), Draft EISs (DEISs), Final EISs (FEISs), RODs and all associated transmittal packages as specified in § 651.45. Such delegation will specify requirements for coordination with ODEP and ASA (I&E).

§ 651.8 Disposition of final documents.

All NEPA documentation and supporting administrative records shall be retained by the proponent's office for a minimum of six years after signature of the FNSI/ROD or the completion of the action, whichever is greater. Copies of EAs, and final EISs will be forwarded to AEC for cataloging and retention in the Army NEPA library. The DEIS and FEIS will be retained until the proposed action and any mitigation program is complete or the information therein is no longer valid. The ACSIM shall forward copies of all FEISs to DTIC, the National Archives, and Records Administration.

Subpart B—National Environmental Policy Act and the Decision Process

§ 651.9 Introduction.

(a) The NEPA process is the systematic examination of possible and probable environmental consequences of implementing a proposed action. Integration of the NEPA process with other Army projects and program planning must occur at the earliest possible time to ensure that:

(1) Planning and decision-making reflect Army environmental values, such as compliance with environmental policy, laws, and regulations; and that these values are evident in Army decisions. In addition, Army decisions must reflect consideration of other requirements such as Executive Orders and other non-statutory requirements, examples of which are enumerated in § 651.14(e).

(2) Army and DOD environmental policies and directives are implemented.

(3) Delays and potential conflicts in the process are minimized. The public should be involved as early as possible to avoid potential delays.

(b) All Army decision-making that may impact the human environment will use a systematic, interdisciplinary approach that ensures the integrated use of the natural and social sciences, planning, and the environmental design arts (section 102(2)(a), Public Law 91–190, 83 Stat. 852, National Environmental Policy Act of 1969 (NEPA)). This approach allows timely identification of environmental effects and values in sufficient detail for concurrent evaluation with economic, technical, and mission-related analyses, early in the decision process.

(c) The proponent of an action or project must identify and describe the range of reasonable alternatives to accomplish the purpose and need for the proposed action or project, taking a ''hard look'' at the magnitude of potential impacts of implementing the reasonable alternatives, and evaluating their significance. To assist in identifying reasonable alternatives, the proponent should consult with the installation environmental office and appropriate federal, tribal, state, and local agencies, and the general public.

§ 651.10 Actions requiring environmental analysis.

The general types of proposed actions requiring environmental impact analysis under NEPA, unless categorically excluded or otherwise included in existing NEPA documentation, include:

(a) Policies, regulations, and procedures (for example, Army and installation regulations).

(b) New management and operational concepts and programs, including logistics; RDT&E; procurement; personnel assignment; real property and facility management (such as master plans); and environmental programs such as Integrated Natural Resource Management Plan (INRMP), Integrated Cultural Resources Management Plan (ICRMP), and Integrated Pest Management Plan. NEPA requirements may be incorporated into other Army plans in accordance with 40 CFR 1506.4.

(c) Projects involving facilities construction.

(d) Operations and activities including individual and unit training, flight operations, overall operation of installations, or facility test and evaluation programs.

(e) Actions that require licenses for operations or special material use, including a Nuclear Regulatory Commission (NRC) license, an Army radiation authorization, or Federal Aviation Administration air space request (new, renewal, or amendment), in accordance with AR 95–50.

(f) Materiel development, operation and support, disposal, and/or modification as required by DOD 5000.2–R.

(g) Transfer of significant equipment or property to the ARNG or Army Reserve.

(h) Research and development including areas such as genetic engineering, laser testing, and electromagnetic pulse generation.

(i) Leases, easements, permits, licenses, or other entitlement for use, to include donation, exchange, barter, or Memorandum of Understanding (MOU). Examples include grazing leases, grants of easement for highway right-of-way, and requests by the public to

use land for special events such as air shows or carnivals.

(j) Federal contracts, grants, subsidies, loans, or other forms of funding such as Government-Owned, Contractor-Operated (GOCO) industrial plants or housing and construction via third-party contracting.

(k) Request for approval to use or store materials, radiation sources, hazardous and toxic material, or wastes on Army land. If the requester is non-Army, the responsibility to prepare proper environmental documentation may rest with the non-Army requester, who will provide needed information for Army review. The Army must review and adopt all NEPA documentation before approving such requests.

(l) Projects involving chemical weapons/munitions.

§ 651.11 Environmental review categories.

The following are the five broad categories into which a proposed action may fall for environmental review:

(a) *Exemption by law*. The law must apply to DOD and/or the Army and must prohibit, exempt, or make impossible full compliance with the procedures of NEPA (40 CFR 1506.11). While some aspects of Army decision-making may be exempted from NEPA, other aspects of an action are still subject to NEPA analysis and documentation. The fact that Congress has directed the Army to take an action does not constitute an exemption.

(b) *Emergencies*. In the event of an emergency, the Army will, as necessary, take immediate actions that have environmental impacts, such as those to promote national defense or security or to protect life or property, without the specific documentation and procedural requirements of other sections of this part. In such cases, at the earliest practicable time, the HQDA proponent will notify the ODEP, which in turn will notify the ASA(I&E). ASA(I&E) will coordinate with the Deputy Under Secretary of Defense for Installations and Environment (DUSD(IE)) and the CEQ regarding the emergency and subsequent NEPA compliance after the emergency action has been completed. These notifications apply only to actions necessary to control the immediate effects of the emergency. Other actions remain subject to NEPA review (40 CFR 1506.11). A public affairs plan should be developed to ensure open communication among the media, the public, and the installation. The Army will not delay an emergency action necessary for national defense, security, or preservation of human life or property in order to comply with this part or the CEQ regulations. However, the Army's on-site commander dealing with the emergency will consider the probable environmental consequences of proposed actions, and will minimize environmental damage to the maximum degree practicable, consistent with protecting human life, property, and national security. State call-ups of ARNG during a natural disaster or other state emergency are excluded from this notification requirement. After action reports may be required at the discretion of the ASA(I&E).

(c) *Categorical Exclusions (CXs)*. These are categories of actions that normally do not require an EA or an EIS. The Army has determined that they do not individually or cumulatively have a substantial effect on the human environment. Qualification for a CX is further described in subpart D and appendix B of this part. In accordance with § 651.29, actions that degrade the existing environment or are environmentally controversial or adversely affect environmentally sensitive resources will require an EA.

(d) *Environmental Assessment*. Proposed Army actions not covered in the first three categories (paragraphs (a) through (c) of this section) must be analyzed to determine if they could cause significant impacts to the human or natural environment (see § 651.39). The EA determines whether possible impacts are significant, thereby warranting an EIS. This requires a ''hard look'' at the magnitude of potential impacts, evaluation of their significance, and documentation in the form of either an NOI to prepare an EIS or a FNSI. The format (§ 651.34) and requirements for this analysis are addressed in subpart E of this part (see § 651.33 for actions normally requiring an EA). The

EA is a valuable planning tool to discuss and document environmental impacts, alternatives, and controversial actions, providing public and agency participation, and identifying mitigation measures.

(e) *EIS*. When an action clearly has significant impacts or when an EA cannot be concluded by a FNSI, an EIS must be prepared. An EIS is initiated by the NOI (§ 651.22), and will examine the significant environmental effects of the proposed action as well as accompanying measures to mitigate those impacts. This process requires formal interaction with the public, a formal ''scoping'' process, and specified timelines for public review of the documentation and the incorporation of public comments. The format and requirements for the EIS are addressed in subpart F of this part (see § 651.42 for actions normally requiring an EIS).

§ 651.12 Determining appropriate level of NEPA analysis.

(a) The flow chart shown in Figure 1 summarizes the process for determining documentation requirements, as follows:

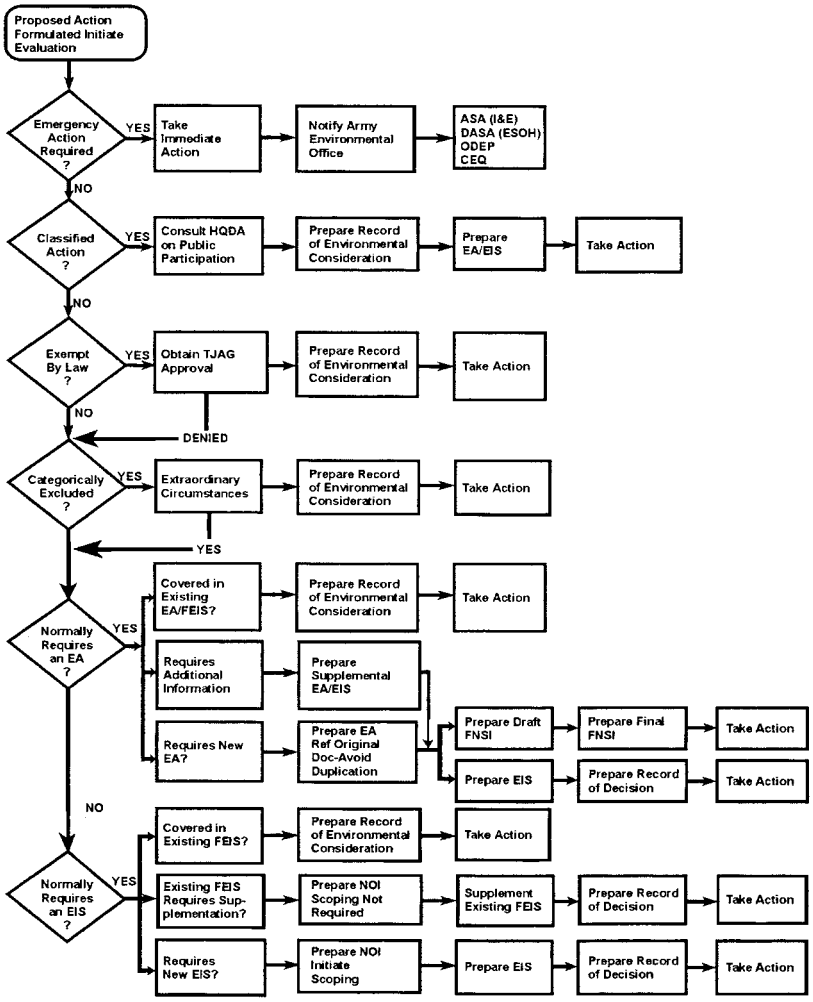

Figure 1. Flow chart summarizing process for determination of document requirements.

(1) If the proposed action qualifies as a CX (subpart D of this part), and the screening criteria are met (§ 651.29), the action can proceed. Some CXs require a REC.

(2) If the proposed action is adequately covered within an existing EA or EIS, a REC is prepared to that effect. The REC should state the applicable EA or EIS title and date, and identify where it may be reviewed (§ 651.19, Figure 3). The REC is then attached to the proponent's record copy of that EA or EIS.

(3) If the proposed action is within the general scope of an existing EA or

EIS, but requires additional information, a supplement is prepared, considering the new, modified, or missing information. Existing documents are incorporated by reference and conclusions are published as either a FNSI or NOI to supplement the EIS.

(4) If the proposed action is not covered adequately in any existing EA or EIS, or is of a significantly larger scope than that described in the existing document, an EA is prepared, followed by either a FNSI or NOI to prepare an EIS. Initiation of an EIS may proceed without first preparing an EA, if deemed appropriate by the proponent.

(5) If the proposed action is not within the scope of any existing EA or EIS, then the proponent must begin the preparation of a new EA or EIS, as appropriate.

(b) The proponent of a proposed action may adopt appropriate environmental documents (EAs or EISs) prepared by another agency (40 CFR 1500.4(n) and 1506.3). In such cases, the proponent will document their use in a REC FNSI, or ROD.

§ 651.13 Classified actions.

(a) For proposed actions and NEPA analyses involving classified information, AR 380–5 (Department of the Army Information Security Program) will be followed.

(b) Classification does not relieve a proponent of the requirement to assess and document the environmental effects of a proposed action.

(c) When classified information can be reasonably separated from other information and a meaningful environmental analysis produced, unclassified documents will be prepared and processed in accordance with this part. Classified portions will be kept separate and provided to reviewers and decision makers in accordance with AR 380–5.

(d) When classified information is such an integral part of the analysis of a proposal that a meaningful unclassified NEPA analysis cannot be produced, the proponent, in consultation with the appropriate security and environmental offices, will form a team to review classified NEPA analysis. This interdisciplinary team will include environmental professionals to ensure that the consideration of environmental effects will be consistent with the letter and intent of NEPA, including public participation requirements for those aspects which are not classified.

§ 651.14 Integration with Army planning.

(a) *Early integration.* The Army goal is to concurrently integrate environmental reviews with other Army planning and decision-making actions, thereby avoiding delays in mission accomplishment. To achieve this goal, proponents shall complete NEPA analysis as part of any recommendation or report to decision makers prior to the decision (subject to 40 CFR 1506.1). Early planning (inclusion in Installation Master Plans, INRMPs, ICRMPs, Acquisition Strategies, strategic plans, etc.) will allow efficient program or project execution later in the process.

(1) The planning process will identify issues that are likely to have an effect on the environment, or to be controversial. In most cases, local citizens and/or existing advisory groups should assist in identifying potentially controversial issues during the planning process. The planning process also identifies minor issues that have little or no measurable environmental effect, and it is sound NEPA practice to reduce or eliminate discussion of minor issues to help focus analyses. Such an approach will minimize unnecessary analysis and discussion in the NEPA process and documents.

(2) Decision makers will be informed of and consider the environmental consequences at the same time as other factors such as mission requirements, schedule, and cost. If permits or coordination are required (for example, Section 404 of the Clean Water Act, Endangered Species Act consultation, Section 106 of the National Historic Preservation Act (NHPA), etc.), they should be initiated no later than the scoping phase of the process and should run parallel to the NEPA process, not sequential to it. This practice is in accordance with the recommendations

presented in the CEQ publication entitled ''The National Environmental Policy Act: A Study of Its Effectiveness After Twenty-five Years.''

(3) NEPA documentation will accompany the proposal through the Army review and decision-making processes. These documents will be forwarded to the planners, designers, and/or implementers, ensuring that the recommendations and mitigations upon which the decision was based are being carried out. The implementation process will provide necessary feedback for adaptive environmental management; responding to inaccuracies or uncertainties in the Army's ability to accurately predict impacts, changing field conditions, or unexpected results from monitoring. The integration of NEPA into the ongoing planning activities of the Army can produce considerable savings to the Army.[1]

(b) *Time limits*. The timing of the preparation, circulation, submission, and public availability of NEPA documentation is important to ensure that environmental values are integrated into Army planning and decisions.

(1) *Categorical exclusions*. When a proposed action is categorically excluded from further environmental review (subpart D and appendix B of this part), the proponent may proceed immediately with that action upon receipt of all necessary approvals, (including local environmental office confirmation that the CX applies to the proposal) and the preparation of a REC, if required.

(2) *Findings of no significant impact*. (i) A proponent will make an EA and draft FNSI available to the public for review and comment for a minimum of 30 days prior to making a final decision and proceeding with an action. If the proposed action is one of national concern, is unprecedented, or normally requires an EIS (§ 651.42), the FNSI must be published in the FR. Otherwise, the FNSI must be published in local newspapers and be made widely available. The FNSI must articulate the deadline for receipt of comments, availability of the EA for review, and steps required to obtain the EA. This can include a POC, address, and phone number; a location; a reference to a website; or some equivalent mechanism. (In no cases will the only coordination mechanism be a website.) At the conclusion of the appropriate comment period, as specified in Figure 2, the decision maker may sign the FNSI and take immediate action, unless sufficient public comments are received to warrant more time for their resolution. Figure 2 follows:

[1] For example, a well-executed EA or EIS on an Installation Master Plan can eliminate the need for many case-by-case analyses and documentation for construction projects. After the approval of an adequate comprehensive plan (which adequately addresses the potential for environmental effects), subsequent projects can tier off of the Master Plan NEPA analysis (AR 210–20). Other integration of the NEPA process and broad-level planning can lead to the ''tiering'' of NEPA, allowing the proponent to minimize the effort spent on individual projects, and ''incorporating by reference'' the broader level environmental considerations. This tiering allows the development of program level (programmatic) EAs and EISs, which can introduce greater economies of scale. These assessments are addressed in more detail in paragraph (c) of this section.

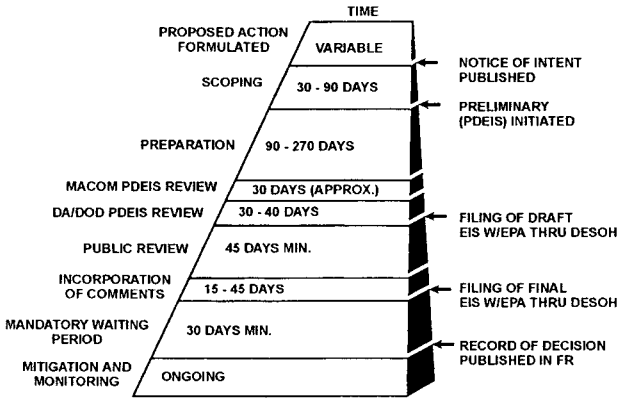

Figure 2. Time involved for preparing and processing an environmental impact statement.

(ii) A news release is required to publicize the availability of the EA and draft FNSI, and a simultaneous announcement that includes publication in the FR must be made by HQDA, if warranted (see §651.35 (e)). The 30-day waiting period begins at the time that the draft FNSI is publicized (40 CFR 1506.6(b)).

(iii) In cases where the 30-day comment period jeopardizes the project and the full comment period would provide no public benefit, the period may be shortened with appropriate approval by a higher decision authority (such as a MACOM). In no circumstances should the public comment period for an EA/draft FNSI be less than 15 days. A deadline and POC for receipt of comments must be included in the draft FNSI and the news release.

(3) *EIS*. The EPA publishes a weekly notice in the FR of the EISs filed during the preceding week. This notice usually occurs each Friday. An NOA reaching EPA on a Friday will be published in the following Friday issue of the FR. Failure to deliver an NOA to EPA by close of business on Friday will result in an additional one-week delay. A news release publicizing the action will be made in conjunction with the notice in the FR. The following time periods, calculated from the publication date of the EPA notice, will be observed:

(i) Not less than 45 days for public comment on DEISs (40 CFR 1506.10(c)).

(ii) Not less than 15 days for public availability of DEISs prior to any public hearing on the DEIS (40 CFR 1506(c)(2)).

(iii) Not less than 90 days from filing the DEIS prior to any decision on the proposed action. These periods may run concurrently (40 CFR 1506.10(b) and (c)).

(iv) The time periods prescribed here may be extended or reduced in accordance with 40 CFR 1506.10(b)(2) and (d).

(v) When variations to these time limits are set, the Army agency should consider the factors in 40 CFR 1501.8(b)(1).

(vi) The proponent may also set time limits for other procedures or decisions related to DEISs and FEISs as listed in 40 CFR 1501.8(b)(2).

(vii) Because the entire EIS process could require more than one year (Figure 2 in paragraph (b)(2)(i) of this section), the process must begin as soon as the project is sufficiently mature to allow analysis of alternatives and the proponent must coordinate with all staff elements with a role to play in the NEPA process. DEIS preparation and response to comments constitute the largest portion of time to prepare an FEIS.

(viii) A public affairs plan should be developed that provides for periodic interaction with the community. There is a minimum public review time of 90 days between the publication of the DEIS and the announcement of the ROD. After the availability of the ROD is announced, the action may proceed. This announcement must be made through the FR for those EISs for which HQDA signs the ROD. For other EISs, announcements in the local press are adequate. Figure 2 in paragraph (b)(2)(i) of this section indicates typical and required time periods for EISs.

(c) *Programmatic environmental review (tiering).* (1) Army agencies are encouraged to analyze actions at a programmatic level for those programs that are similar in nature or broad in scope (40 CFR 1502.4(c), 1502.20, and 1508.23). This level of analysis will eliminate repetitive discussions of the same issues and focus on the key issues at each appropriate level of project review. When a broad programmatic EA or EIS has been prepared, any subsequent EIS or EA on an action included within the entire program or policy (particularly a site-specific action) need only summarize issues discussed in the broader statement and concentrate on the issues specific to the subsequent action.[2] This subsequent document will state where the earlier document is available.

(2) Army proponents are normally required to prepare many types of management plans that must include or be accompanied by appropriate NEPA analysis. NEPA analysis for these types of plans can often be accomplished with a programmatic approach, creating an analysis that covers a number of smaller projects or activities. In cases where such activities are adequately assessed as part of these normal planning activities, a REC can be prepared for smaller actions that cite the document in which the activities were previously assessed. Care must be taken to ensure that site-specific or case-specific conditions are adequately addressed in the existing programmatic document before a REC can be used, and the REC must reflect this consideration. If additional analyses are required, they can ''tier'' off the original analyses, eliminating duplication. Tiering, in this manner, is often applicable to Army actions that are long-term, multi-faceted, or multi-site.

(d) *Scoping.* (1) When the planning for an Army project or action indicates a need for an EIS, the proponent initiates the scoping process (see subpart G of this part for procedures and actions). This process determines the scope of issues to address in the EIS and identifies the significant issues related to the proposed action. During the scoping, process participants identify the range of actions, alternatives, and impacts to consider in the EIS (40 CFR 1508.25). For an individual action, the scope may depend on the relationship of the proposed action to other NEPA documents. The scoping phase of the NEPA process, as part of project planning, will identify aspects of the proposal that are likely to have an effect or be controversial; and will ensure that the NEPA analyses are useful for a decision maker. For example, the early identification and initiation of permit or coordination actions can facilitate problem resolution, and, similarly, cumulative effects can be addressed early in the process and at the appropriate spatial and temporal scales.

(2) The extent of the scoping process, including public involvement, will depend on several factors. These factors include:

(i) The size and type of the proposed action.

(ii) Whether the proposed action is of regional or national interest.

(iii) Degree of any associated environmental controversy.

(iv) Size of the affected environmental parameters.

(v) Significance of any effects on them.

(vi) Extent of prior environmental review.

(vii) Involvement of any substantive time limits.

[2] As an example, an appropriate way to address diverse weapon system deployments would be to produce site-specific EAs or EISs for each major deployment installation, using the generic environmental effects of the weapon system identified in a programmatic EA or EIS prepared by the MATDEV.

(viii) Requirements by other laws for environmental review.

(ix) Cumulative impacts.

(3) Through scoping, many future controversies can be eliminated, and public involvement can be used to narrow the scope of the study, concentrating on those aspects of the analysis that are truly important.

(4) The proponent may incorporate scoping as part of the EA process, as well. If the proponent chooses a public involvement strategy, the extent of scoping incorporated is at the proponent's discretion.

(e) *Analyses and documentation*. Several statutes, regulations, and Executive Orders require analyses, consultation, documentation, and coordination, which duplicate various elements and/or analyses required by NEPA and the CEQ regulations; often leading to confusion, duplication of effort, omission, and, ultimately, unnecessary cost and delay. Therefore, Army proponents are encouraged to identify, early in the NEPA process, opportunities for integrating those requirements into proposed Army programs, policies, and projects. Environmental analyses required by this part will be integrated as much as practicable with other environmental reviews, laws, and Executive Orders (40 CFR 1502.25). Incorporation of these processes must ensure that the individual requirements are met, in addition to those required by NEPA. The NEPA process does not replace the procedural or substantive requirements of other environmental statutes and regulations. Rather, it addresses them in one place so the decision maker has a concise and comprehensive view of the major environmental issues and understands the interrelationships and potential conflicts among the environmental components. NEPA is the ''umbrella'' that facilitates such coordination by integrating processes that might otherwise proceed independently. Prime candidates for such integration include, but are not limited to, the following:

(1) Clean Air Act, as amended (General Conformity Rule, 40 CFR parts 51 and 93).

(2) Endangered Species Act.

(3) NHPA, sections 106 and 110.

(4) NAGPRA (Public Law 101–601, 104 Stat. 3048).

(5) Clean Water Act, including Section 404(b)(1).

(6) American Indian Religious Freedom Act.

(7) Fish and Wildlife Coordination Act.

(8) Comprehensive Environmental Response, Compensation, and Liability Act.

(9) Resource Conservation and Recovery Act.

(10) Pollution Prevention Act.

(11) The Sikes Act, Public Law 86–797, 74 Stat. 1052.

(12) Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements (Executive Order 12856, 3 CFR, 1993 Comp., p. 616).

(13) Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898, 3 CFR, 1994 Comp., p. 859).

(14) Indian Sacred Sites (Executive Order 13007, 3 CFR, 1996 Comp., p. 196).

(15) Protection of Children From Environmental Health Risks and Safety Risks (Executive Order 13045, 3 CFR, 1997 Comp., p. 198).

(16) Federal Support of Community Efforts Along American Heritage Rivers (Executive Order 13061, 3 CFR, 1997 Comp., p. 221).

(17) Floodplain Management (Executive Order 11988, 3 CFR, 1977 Comp., p. 117).

(18) Protection of Wetlands (Executive Order 11990, 3 CFR, 1977 Comp., p. 121).

(19) Environmental Effects Abroad of Major Federal Actions (Executive Order 12114, 3 CFR, 1979 Comp., p. 356).

(20) Invasive Species (Executive Order 13112, 3 CFR, 1999 Comp., p. 159).

(21) AR 200–3, Natural Resources—Land, Forest, and Wildlife Management.

(22) Environmental analysis and documentation required by various state laws.

(23) Any cost-benefit analyses prepared in relation to a proposed action (40 CFR 1502.23).

(24) Any permitting and licensing procedures required by federal and state law.

(25) Any installation and Army master planning functions and plans.

(26) Any installation management plans, particularly those that deal directly with the environment.

(27) Any stationing and installation planning, force development planning, and materiel acquisition planning.

(28) Environmental Noise Management Program.

(29) Hazardous waste management plans.

(30) Integrated Cultural Resource Management Plan as required by AR 200–4 and DODD 4700.4, Natural Resources Management Program.

(31) Asbestos Management Plans.

(32) Integrated Natural Resource Management Plans, AR 200–3, Natural Resources—Land, Forest, and Wildlife Management, and DODD 4700.4, Natural Resources Management Program.

(33) Environmental Baseline Surveys.

(34) Programmatic Environment, Safety, and Health Evaluation (PESHE) as required by DOD 5000.2-R and DA Pamphlet 70–3, Army Acquisition Procedures, supporting AR 70–1, Acquisition Policy.

(35) The DOD MOU to Foster the Ecosystem Approach signed by CEQ, and DOD, on 15 December 1995; establishing the importance of ''non-listed,'' ''non-game,'' and ''non-protected'' species.

(36) Other requirements (such as health risk assessments), when efficiencies in the overall Army environmental program will result.

(f) *Integration into Army acquisition.* The Army acquisition community will integrate environmental analyses into decision-making, as required in this part ensuring that environmental considerations become an integral part of total program planning and budgeting, PEOs, and Program, Product, and Project Managers integrate the NEPA process early, and acquisition planning and decisions reflect national and Army environmental values and considerations. By integrating pollution prevention and other aspects of any environmental analysis early into the materiel acquisition process, the PEO and PM facilitate the identification of environmental cost drivers at a time when they can be most effectively controlled. NEPA program coordinators should refer to DA Pamphlet 70–3, Army Acquisition Procedures, and the Defense Acquisition Deskbook (DAD) for current specific implementation guidance, procedures, and POCs.

(g) *Relations with local, state, regional, and tribal agencies.* (1) Army installation, agency, or activity environmental officers or planners should establish a continuing relationship with other agencies, including the staffs of adjacent local, state, regional, and tribal governments and agencies. This relationship will promote cooperation and resolution of mutual land use and environment-related problems, and promote the concept of regional ecosystem management as well as general cooperative problem solving. Many of these ''partners'' will have specialized expertise and access to environmental baseline data, which will assist the Army in day-to-day planning as well as NEPA-related issues. MOUs are encouraged to identify areas of mutual interest, establish POCs, identify lines of communication between agencies, and specify procedures to follow in conflict resolution. Additional coordination is available from state and area-wide planning and development agencies. Through this process, the proponent may gain insights on other agencies' approaches to EAs, surveys, and studies applicable to the current proposal. These other agencies would also be able to assist in identifying possible participants in scoping procedures for projects requiring an EIS.

(2) In some cases, local, state, regional, or tribal governments or agencies will have sufficient jurisdiction by law or special expertise with respect to reasonable alternatives or significant environmental, social, or economic impacts associated with a proposed action. When appropriate, proponents of an action should determine whether these entities have an interest in becoming a cooperating agency (§ 651.45 (b) and 40 CFR 1501.6). If cooperating agency status is established, a memorandum of agreement is required to document specific expectations, roles, and responsibilities, including analyses to be performed, time schedules, availability of pre-decisional information, and other issues. Cooperating agencies may use their own funds, and the designation of cooperating agency status

neither enlarges nor diminishes the decision-making status of any federal or non-federal entities (see CEQ Memorandum for Heads of Federal Agencies entitled ''Designation of Non-Federal Agencies to be Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act'' dated 28 July 1999, available from the President's Council on Environmental Quality (CEQ), Executive Office of the President of the U.S.). In determining sufficient jurisdiction or expertise, CEQ regulations can be used as guidance.

(h) *The Army as a cooperating agency.* Often, other agencies take actions that can negatively impact the Army mission. In such cases, the Army may have some special or unique expertise or jurisdiction.

(1) The Army may be a cooperating agency (40 CFR 1501.6) in order to:

(i) Provide information or technical expertise to a lead agency.

(ii) Approve portions of a proposed action.

(iii) Ensure the Army has an opportunity to be involved in an action of another federal agency that will affect the Army.

(iv) Provide review and approval of the portions of EISs and RODs that affect the Army.

(2) Adequacy of an EIS is primarily the responsibility of the lead agency. However, as a cooperating agency with approval authority over portions of a proposal, the Army may adopt an EIS if review concludes the EIS adequately satisfies the Army's comments and suggestions.

(3) If the Army is a major approval authority for the proposed action, the appropriate Army official may sign the ROD prepared by the lead agency, or prepare a separate, more focused ROD. If the Army's approval authority is only a minor aspect of the overall proposal, such as issuing a temporary use permit, the Army need not sign the lead agency's ROD or prepare a separate ROD.

(4) The magnitude of the Army's involvement in the proposal will determine the appropriate level and scope of Army review of NEPA documents. If the Army is a major approval authority or may be severely impacted by the proposal or an alternative, the Army should undertake the same level of review as if it were the lead agency. If the involvement is limited, the review may be substantially less. The lead agency is responsible for overall supervision of the EIS, and the Army will attempt to meet all reasonable time frames imposed by the lead agency.

(5) If an installation (or other Army organization) should become aware of an EIS being prepared by another federal agency in which they may be involved within the discussion of the document, they should notify ASA(I&E) through the chain of command. ASA(I&E) will advise regarding appropriate Army participation as a cooperating agency, which may simply involve local coordination.

§ 651.15 Mitigation and monitoring.

(a) Throughout the environmental analysis process, the proponent will consider mitigation measures to avoid or minimize environmental harm. Mitigation measures include:

(1) Avoiding the impact altogether, by eliminating the action or parts of the action.

(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(3) Rectifying the impact; by repairing, rehabilitating, or restoring the adverse effect on the environment.

(4) Reducing or eliminating the impact over time, by preservation and maintenance operations during the life of the action.

(5) Compensating for the impact, by replacing or providing substitute resources or environments. (Examples and further clarification are presented in appendix C of this part.)

(b) When the analysis proceeds to an EA or EIS, mitigation measures will be clearly assessed and those selected for implementation will be identified in the FNSI or the ROD. The proponent must implement those identified mitigations, because they are commitments made as part of the Army decision. The proponent is responsible for responding to inquiries from the public or other agencies regarding the status of mitigation measures adopted in the NEPA process. The mitigation shall become a line item in the proponent's

budget or other funding document, if appropriate, or included in the legal document implementing the action (for example, contracts, leases, or grants). Only those practical mitigation measures that can reasonably be accomplished as part of a proposed alternative will be identified. Any mitigation measures selected by the proponent will be clearly outlined in the NEPA decision document, will be budgeted and funded (or funding arranged) by the proponent, and will be identified, with the appropriate fund code, in the EPR (AR 200–1). Mitigations will be monitored through environmental compliance reporting, such as the ISR (AR 200–1) or the Environmental Quality Report. Mitigation measures are identified and funded in accordance with applicable laws, regulations, or other media area requirements.

(c) Based upon the analysis and selection of mitigation measures that reduce environmental impacts until they are no longer significant, an EA may result in a FNSI. If a proponent uses mitigation measures in such a manner, the FNSI must identify these mitigating measures, and they become legally binding and must be accomplished as the project is implemented. If any of these identified mitigation measures do not occur, so that significant adverse environmental effects could reasonably expected to result, the proponent must publish an NOI and prepare an EIS.

(d) Potential mitigation measures that appear practical, and are unobtainable within expected Army resources, or that some other agency (including non-Army agencies) should perform, will be identified in the NEPA analysis to the maximum extent practicable. A number of factors determine what is practical, including military mission, manpower restrictions, cost, institutional barriers, technical feasibility, and public acceptance. Practicality does not necessarily ensure resolution of conflicts among these items, rather it is the degree of conflict that determines practicality. Although mission conflicts are inevitable, they are not necessarily insurmountable; and the proponent should be cautious about declaring all mitigations impractical and carefully consider any manpower requirements. The key point concerning both the manpower and cost constraints is that, unless money is actually budgeted and manpower assigned, the mitigation does not exist. Coordination by the proponent early in the process will be required to allow ample time to get the mitigation activities into the budget cycle. The project cannot be undertaken until all required mitigation efforts are fully resourced, or until the lack of funding and resultant effects, are fully addressed in the NEPA analysis.

(e) Mitigation measures that were considered but rejected, including those that can be accomplished by other agencies, must be discussed, along with the reason for the rejection, within the EA or EIS. If they occur in an EA, their rejection may lead to an EIS, if the resultant unmitigated impacts are significant.

(f) Proponents may request assistance with mitigation from cooperating non-Army agencies, when appropriate. Such assistance is appropriate when the requested agency was a cooperating agency during preparation of a NEPA document, or has the technology, expertise, time, funds, or familiarity with the project or the local ecology necessary to implement the mitigation measure more effectively than the lead agency.

(g) The proponent agency or other appropriate cooperating agency will implement mitigations and other conditions established in the EA or EIS, or commitments made in the FNSI or ROD. Legal documents implementing the action (such as contracts, permits, grants) will specify mitigation measures to be performed. Penalties against a contractor for noncompliance may also be specified as appropriate. Specification of penalties should be fully coordinated with the appropriate legal advisor.

(h) A monitoring and enforcement program for any mitigation will be adopted and summarized in the NEPA documentation (see appendix C of this part for guidelines on implementing such a program). Whether adoption of a monitoring and enforcement program is applicable (40 CFR 1505.2(c)) and

whether the specific adopted action requires monitoring (40 CFR 1505.3) may depend on the following:

(1) A change in environmental conditions or project activities assumed in the EIS (such that original predictions of the extent of adverse environmental impacts may be too limited);

(2) The outcome of the mitigation measure is uncertain (for example, new technology);

(3) Major environmental controversy remains associated with the selected alternative; or

(4) Failure of a mitigation measure, or other unforeseen circumstances, could result in a failure to meet achievement of requirements (such as adverse effects on federal or state listed endangered or threatened species, important historic or archaeological sites that are either listed or eligible for nomination to the National Register of Historic Places, wilderness areas, wild and scenic rivers, or other public or private protected resources). Proponents must follow local installation environmental office procedures to coordinate with appropriate federal, tribal, state, or local agencies responsible for a particular program to determine what would constitute ''adverse effects.''

(i) Monitoring is an integral part of any mitigation system.

(1) Enforcement monitoring ensures that mitigation is being performed as described in the NEPA documentation, mitigation requirements and penalty clauses are written into any contracts, and required provisions are enforced. The development of an enforcement monitoring program is governed by who will actually perform the mitigation: a contractor, a cooperating agency, or an in-house (Army) lead agency. Detailed guidance is contained in Appendix C of this part. The proponent is ultimately responsible for performing any mitigation activities. All monitoring results will be sent to the installation Environmental Office; in the case of the Army Reserves, the Regional Support Commands (RSCs); and, in the case of the National Guard, the NGB.

(2) Effectiveness monitoring measures the success of the mitigation effort and/or the environmental effect. While quantitative measurements are desired, qualitative measures may be required. The objective is to obtain enough information to judge the effect of the mitigation. In establishing the monitoring system, the responsible agent should coordinate the monitoring with the Environmental Office. Specific steps and guidelines are included in appendix C of this part.

(j) The monitoring program, in most cases, should be established well before the action begins, particularly when biological variables are being measured and investigated. At this stage, any necessary contracts, funding, and manpower assignments must be initiated. Technical results from the analysis should be summarized by the proponent and coordinated with the installation Environmental Office. Subsequent coordination with the concerned public and other agencies, as arranged through development of the mitigation plan, will be handled through the Environmental Office.

(k) If the mitigations are effective, the monitoring should be continued as long as the mitigations are needed to address impacts of the initial action. If the mitigations are ineffective, the proponent and the responsible group should re-examine the mitigation measures, in consultation with the Environmental Office and appropriate experts, and resolve the inadequacies of the mitigation or monitoring. Professionals with specialized and recognized expertise in the topic or issue, as well as concerned citizens, are essential to the credibility of this review. If a different program is required, then a new system must be established. If ineffective mitigations are identified which were required to reduce impact below significance levels (§ 651.35 (g)), the proponent may be required to publish an NOI and prepare an EIS (paragraph (c) of this section).

(l) *Environmental monitoring report*. An environmental monitoring report is prepared at one or more points after program or action execution. Its purpose is to determine the accuracy of impact predictions. It can serve as the basis for adjustments in mitigation programs and to adjust impact predictions in future projects. Further

guidance and clarification are included in appendix C of this part.

§ 651.16 Cumulative impacts.

(a) NEPA analyses must assess cumulative effects, which are the impact on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Actions by federal, non-federal agencies, and private parties must be considered (40 CFR 1508.7).

(b) The scoping process should be used to identify possible cumulative impacts. The proponent should also contact appropriate off-post officials, such as tribal, state, county, or local planning officials, to identify other actions that should be considered in the cumulative effects analysis.

(c) A suggested cumulative effects approach is as follows:

(1) Identify the boundary of each resource category. Boundaries may be geographic or temporal. For example, the Air Quality Control Region (AQCR) might be the appropriate boundary for the air quality analysis, while a watershed could be the boundary for the water quality analysis. Depending upon the circumstances, these boundaries could be different and could extend off the installation.

(2) Describe the threshold level of significance for that resource category. For example, a violation of air quality standards within the AQCR would be an appropriate threshold level.

(3) Determine the environmental consequence of the action. The analysis should identify the cause and effect relationships, determine the magnitude and significance of cumulative effects, and identify possible mitigation measures.

§ 651.17 Environmental justice.

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, 11 February 1994, 3 CFR, 1994 Comp., p. 859) requires the proponent to determine whether the proposed action will have a disproportionate impact on minority or low-income communities, both off-post and on-post.

Subpart C—Records and Documents

§ 651.18 Introduction.

NEPA documentation will be prepared and published double-sided on recycled paper. The recycled paper symbol should be presented on the inside of document covers.

§ 651.19 Record of environmental consideration.

A Record of Environmental Consideration (REC) is a signed statement submitted with project documentation that briefly documents that an Army action has received environmental review. RECs are prepared for CXs that require them, and for actions covered by existing or previous NEPA documentation. A REC briefly describes the proposed action and timeframe, identifies the proponent and approving official(s), and clearly shows how an action qualifies for a CX, or is already covered in an existing EA or EIS. When used to support a CX, the REC must address the use of screening criteria to ensure that no extraordinary circumstances or situations exist. A REC has no prescribed format, as long as the above information is included. To reduce paperwork, a REC can reference such documents as real estate Environmental Baseline Studies (EBSs) and other documents, as long as they are readily available for review. While a REC may document compliance with the requirements of NEPA, it does not fulfill the requirements of other environmental laws and regulations. Figure 3 illustrates a possible format for the REC as follows:

Record of Environmental Consideration (REC)

To: (Environmental Officer)
From: (Proponent)
Project title:
Breif description:

Anticipated date and/or duration of proposed action: (Month/year)
Reason for using record of environmental consideration (choose one):
a. Adequantely covered in an (EA, EIS) entitled _____, dated _____,
The EA/EIS may be reviewed at _____, (location)
OR,
b. Is categorically excluded under the provisions of CX _____, AR 200-2, appendix A, (and no extraordinary circumstances exist as defined in paragraph 4-3), because

_____

_____

_____

Date Project Proponent

_____

Date Installation Environmental Coordinator

Variation from this format is acceptable provided basic information and approvals are included in any modified document.

Figure 3. Suggested format for Record of Environmental Consideration.

§651.20 Environmental assessment.

An EA is intended to assist agency planning and decision-making. While required to assess environmental impacts and evaluate their significance, it is routinely used as a planning document to evaluate environmental impacts, develop alternatives and mitigation measures, and allow for agency and public participation. It:

(a) Briefly provides the decision maker with sufficient evidence and analysis for determining whether a FNSI or an EIS should be prepared.

(b) Assures compliance with NEPA, if an EIS is not required and a CX is inappropriate.

(c) Facilitates preparation of an EIS, if required.

(d) Includes brief discussions of the need for the proposed action, alternatives to the proposed action (NEPA, section 102(2)(e)), environmental impacts, and a listing of persons and agencies consulted (see subpart E of this part for requirements).

(e) The EA provides the proponent, the public, and the decision maker with sufficient evidence and analysis for determining whether environmental impacts of a proposed action are potentially significant. An EA is substantially less rigorous and costly than an EIS, but requires sufficient detail to identify and ascertain the significance of expected impacts associated with the proposed action and its alternatives. The EA can often provide the required "hard look" at the potential environmental effects of an action, program, or policy within 1 to 25 pages, depending upon the nature of the action and project-specific conditions.

§651.21 Finding of no significant impact.

A Finding of No Significant Impact (FNSI) is a document that briefly states why an action (not otherwise excluded) will not significantly affect the environment, and, therefore, that an EIS will not be prepared. The FNSI includes a summary of the EA and notes any related NEPA documentation. If the EA is attached, the FNSI need not repeat any of the EA discussion, but may incorporate it by reference. The draft FNSI will be made available to the public for review and comment for

30 days prior to the initiation of an action, except in special circumstances when the public comment period is reduced to 15 days, as discussed in § 651.14(b)(2)(iii). Following the comment period and review of public comments, the proponent forwards a decision package that includes a comparison of environmental impacts associated with reasonable alternatives, summary of public concerns, revised FNSI (if necessary), and recommendations for the decision maker. The decision maker reviews the package, makes a decision, and signs the FNSI or the NOI (if the FNSI no longer applies). If a FNSI is signed by the decision maker, the action can proceed immediately.

§ 651.22 Notice of intent.

A Notice of Intent (NOI) is a public notice that an EIS will be prepared. The NOI will briefly:

(a) Describe the proposed and alternative actions.

(b) Describe the proposed scoping process, including when and where any public meetings will be held.

(c) State the name and address of the POC who can answer questions on the proposed action and the EIS (see § 651.45(a) and § 651.49 for application).

§ 651.23 Environmental impact statement.

An Environmental Impact statement (EIS) is a detailed written statement required by NEPA for major federal actions significantly affecting the quality of the human environment (42 U.S.C. 4321). A more complete discussion of EIS requirements is presented in subpart F of this part.

§ 651.24 Supplemental EAs and supplemental EISs.

As detailed in § 651.5(g) and in 40 CFR 1502.9(c), proposed actions may require review of existing NEPA documentation. If conditions warrant a supplemental document, these documents are processed in the same way as an original EA or EIS. No new scoping is required for a supplemental EIS filed within one year of the filing of the original ROD. If the review indicates no need for a supplement, that determination will be documented in a REC.

§ 651.25 Notice of availability.

The Notice of Availability (NOA) is published by the Army to inform the public and others that a NEPA document is available for review. A NOA will be published in the FR, coordinating with EPA for draft and final EISs (including supplements), for RODs, and for EAs and FNSIs which are of national concern, are unprecedented, or normally require an EIS. EAs and FNSIs of local concern will be made available in accordance with § 651.36. This agency NOA should not be confused with the EPA's notice of availability of weekly receipts (NWR)[3] of EISs.

§ 651.26 Record of decision.

The Record of Decision (ROD) is a concise public document summarizing the findings in the EIS and the basis for the decision. A public ROD is required under the provisions of 40 CFR 1505.2 after completion of an EIS (see § 651.45 (j) for application). The ROD must identify mitigations which were important in supporting decisions, such as those mitigations which reduce otherwise significant impacts, and ensure that appropriate monitoring procedures are implemented (see § 651.15 for application).

§ 651.27 Programmatic NEPA analyses.

These analyses, in the form of an EA or EIS, are useful to examine impacts of actions that are similar in nature or broad in scope. These documents allow the ''tiering'' of future NEPA documentation in cases where future decisions or unknown future conditions preclude complete NEPA analyses in one step. These documents are discussed further in § 651.14(c).

Subpart D—Categorical Exclusions

§ 651.28 Introduction.

Categorical Exclusions (CXs) are categories of actions with no individual or

[3] This notice is published by the EPA and officially begins the public review period. The NWR is published each Friday, and lists the EISs that were filed the previous week.

cumulative effect on the human or natural environment, and for which neither an EA nor an EIS is required. The use of a CX is intended to reduce paperwork and eliminate delays in the initiation and completion of proposed actions that have no significant impact.

§ 651.29 Determining when to use a CX (screening criteria).

(a) To use a CX, the proponent must satisfy the following three screening conditions:

(1) The action has not been segmented. Determine that the action has not been segmented to meet the definition of a CX. Segmentation can occur when an action is broken down into small parts in order to avoid the appearance of significance of the total action. An action can be too narrowly defined, minimizing potential impacts in an effort to avoid a higher level of NEPA documentation. The scope of an action must include the consideration of connected, cumulative, and similar actions (see § 651.51(a)).

(2) No exceptional circumstances exist. Determine if the action involves extraordinary circumstances that would preclude the use of a CX (see paragraphs (b) (1) through (14) of this section).

(3) One (or more) CX encompasses the proposed action. Identify a CX (or multiple CXs) that potentially encompasses the proposed action (Appendix B of this part). If no CX is appropriate, and the project is not exempted by statute or emergency provisions, an EA or an EIS must be prepared, before a proposed action may proceed.

(b) Extraordinary circumstances that preclude the use of a CX are:

(1) Reasonable likelihood of significant effects on public health, safety, or the environment.

(2) Reasonable likelihood of significant environmental effects (direct, indirect, and cumulative).

(3) Imposition of uncertain or unique environmental risks.

(4) Greater scope or size than is normal for this category of action.

(5) Reportable releases of hazardous or toxic substances as specified in 40 CFR part 302, Designation, Reportable Quantities, and Notification.

(6) Releases of petroleum, oils, and lubricants (POL) except from a properly functioning engine or vehicle, application of pesticides and herbicides, or where the proposed action results in the requirement to develop or amend a Spill Prevention, Control, or Countermeasures Plan.

(7) When a review of an action that might otherwise qualify for a Record of Non-applicability (RONA) reveals that air emissions exceed de minimis levels or otherwise that a formal Clean Air Act conformity determination is required.

(8) Reasonable likelihood of violating any federal, state, or local law or requirements imposed for the protection of the environment.

(9) Unresolved effect on environmentally sensitive resources, as defined in paragraph (c) of this section.

(10) Involving effects on the quality of the environment that are likely to be highly controversial.

(11) Involving effects on the environment that are highly uncertain, involve unique or unknown risks, or are scientifically controversial.

(12) Establishes a precedent (or makes decisions in principle) for future or subsequent actions that are reasonably likely to have a future significant effect.

(13) Potential for degradation of already existing poor environmental conditions. Also, initiation of a degrading influence, activity, or effect in areas not already significantly modified from their natural condition.

(14) Introduction/employment of unproven technology.

(c) If a proposed action would adversely affect ''environmentally sensitive'' resources, unless the impact has been resolved through another environmental process (e.g., CZMA, NHPA, CWA, etc.) a CX cannot be used (see paragraph (e) of this section). Environmentally sensitive resources include:

(1) Proposed federally listed, threatened, or endangered species or their designated critical habitats.

(2) Properties listed or eligible for listing on the National Register of Historic Places (AR 200–4).

(3) Areas having special designation or recognition such as prime or unique

agricultural lands; coastal zones; designated wilderness or wilderness study areas; wild and scenic rivers; National Historic Landmarks (designated by the Secretary of the Interior); 100-year floodplains; wetlands; sole source aquifers (potential sources of drinking water); National Wildlife Refuges; National Parks; areas of critical environmental concern; or other areas of high environmental sensitivity.

(4) Cultural Resources as defined in AR 200–4.

(d) The use of a CX does not relieve the proponent from compliance with other statutes, such as RCRA, or consultations under the Endangered Species Act or the NHPA. Such consultations may be required to determine the applicability of the CX screening criteria.

(e) For those CXs that require a REC, a brief (one to two sentence) presentation of conclusions reached during screening is required in the REC. This determination can be made using current information and expertise, if available and adequate, or can be derived through conversation, as long as the basis for the determination is included in the REC. Copies of appropriate interagency correspondence can be attached to the REC. Example conclusions regarding screening criteria are as follows:

(1) ''USFWS concurred in informal coordination that E/T species will not be affected''.

(2) ''Corps of Engineers determined action is covered by nationwide general permit''.

(3) ''SHPO concurred with action''.

(4) ''State Department of Natural Resources concurred that no effect to state sensitive species is expected''.

§ 651.30 CX actions.

Types of actions that normally qualify for CX are listed in Appendix B of this part.

§ 651.31 Modification of the CX list.

The Army list of CXs is subject to continual review and modification, in consultation with CEQ. Additional modifications can be implemented through submission, through channels, to ASA (I&E) for consideration and consultation. Subordinate Army headquarters may not modify the CX list through supplements to this part. Upon approval, proposed modifications to the list of CXs will be published in the FEDERAL REGISTER, providing an opportunity for public review and comment.

Subpart E—Environmental Assessment

§ 651.32 Introduction.

(a) An EA is intended to facilitate agency planning and informed decision-making, helping proponents and other decision makers understand the potential extent of environmental impacts of a proposed action and its alternatives, and whether those impacts (or cumulative impacts) are significant. The EA can aid in Army compliance with NEPA when no EIS is necessary. An EA will be prepared if a proposed action:

(1) Is not an emergency (§ 651.11(b)).

(2) Is not exempt from (or an exception to) NEPA (§ 651.11(a)).

(3) Does not qualify as a CX (§ 651.11(c)).

(4) Is not adequately covered by existing NEPA analysis and documentation (§ 651.19).

(5) Does not normally require an EIS (§ 651.42).

(b) An EA can be 1 to 25 pages in length and be adequate to meet the requirements of this part, depending upon site-specific circumstances and conditions. Any analysis that exceeds 25 pages in length should be evaluated to consider whether the action and its effects are significant and thus warrant an EIS.

§ 651.33 Actions normally requiring an EA.

The following Army actions normally require an EA, unless they qualify for the use of a CX:

(a) Special field training exercises or test activities in excess of five acres on Army land of a nature or magnitude not within the annual installation training cycle or installation master plan.

(b) Military construction that exceeds five contiguous acres, including contracts for off-post construction.

(c) Changes to established installation land use that generate impacts on the environment.

(d) Alteration projects affecting historically significant structures, archaeological sites, or places listed or eligible for listing on the National Register of Historic Places.

(e) Actions that could cause significant increase in soil erosion, or affect prime or unique farmland (off Army property), wetlands, floodplains, coastal zones, wilderness areas, aquifers or other water supplies, prime or unique wildlife habitat, or wild and scenic rivers.

(f) Actions proposed during the life cycle of a weapon system if the action produces a new hazardous or toxic material or results in a new hazardous or toxic waste, and the action is not adequately addressed by existing NEPA documentation. Examples of actions normally requiring an EA during the life cycle include, but are not limited to, testing, production, fielding, and training involving natural resources, and disposal/demilitarization. System design, development, and production actions may require an EA, if such decisions establish precedent (or make decisions, in principle) for future actions with potential environmental effects. Such actions should be carefully considered in cooperation with the development or production contractor or government agency, and NEPA analysis may be required.

(g) Development and approval of installation master plans.

(h) Development and implementation of Integrated Natural Resources Management Plans (INRMPs) (land, forest, fish, and wildlife) and Integrated Cultural Resources Management Plans (ICRMPs).

(i) Actions that take place in, or adversely affect, important wildlife habitats, including wildlife refuges.

(j) Field activities on land not controlled by the military, except those that do not alter land use to substantially change the environment (for example, patrolling activities in a forest). This includes firing of weapons, missiles, or lasers over navigable waters of the United States, or extending 45 meters or more above ground level into the national airspace. It also includes joint air attack training that may require participating aircraft to exceed 250 knots at altitudes below 3000 feet above ground level, and helicopters, at any speed, below 500 feet above ground level.

(k) An action with substantial adverse local or regional effects on energy or water availability. Such impacts can only be adequately identified with input from local agencies and/or citizens.

(l) Production of hazardous or toxic materials.

(m) Changes to established airspace use that generate impacts on the environment or socioeconomic systems, or create a hazard to non-participants.

(n) An installation pesticide, fungicide, herbicide, insecticide, and rodenticide-use program/plan.

(o) Acquisition, construction, or alteration of (or space for) a laboratory that will use hazardous chemicals, drugs, or biological or radioactive materials.

(p) An activity that affects a federally listed threatened or endangered plant or animal species, a federal candidate species, a species proposed for federal listing, or critical habitat.

(q) Substantial proposed changes in Army-wide doctrine or policy that potentially have an adverse effect on the environment (40 CFR 1508.18 (b)(1)).

(r) An action that may threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment.

(s) The construction and operation of major new fixed facilities or the substantial commitment of installation natural resources supporting new materiel at the installation.

§ 651.34 EA components.

EAs should be 1 to 25 pages in length, and will include:

(a) Signature (Review and Approval) page.

(b) Purpose and need for the action.

(c) Description of the proposed action.

(d) *Alternatives considered*. The alternatives considered, including appropriate consideration of the ''No Action'' alternative, the ''Proposed Action,'' and all other appropriate and

reasonable alternatives that can be realistically accomplished. In the discussion of alternatives, any criteria for screening alternatives from full consideration should be presented, and the final disposition of any alternatives that were initially identified should be discussed.

(e) *Affected environment*. This section must address the general conditions and nature of the affected environment and establish the environmental setting against which environmental effects are evaluated. This should include any relevant general baseline conditions focusing on specific aspects of the environment that may be impacted by the alternatives. EBSs and similar real estate or construction environmental baseline documents, or their equivalent, may be incorporated and/or referenced.

(f) *Environmental consequences*. Environmental consequences of the proposed action and the alternatives. The document must state and assess the effects (direct, indirect, and cumulative) of the proposed action and its alternatives on the environment, and what practical mitigation is available to minimize these impacts. Discussion and comparison of impacts should provide sufficient analysis to reach a conclusion regarding the significance of the impacts, and is not merely a quantification of facts.

(g) *Conclusions regarding the impacts of the proposed action*. A clear statement will be provided regarding whether or not the described impacts are significant. If the EA identifies potential significant impacts associated with the proposed action, the conclusion should clearly state that an EIS will be prepared before the proposed action is implemented. If no significant impacts are associated with the project, the conclusion should state that a FNSI will be prepared. Any mitigations that reduce adverse impacts must be clearly presented. If the EA depends upon mitigations to support a resultant FNSI, these mitigations must be clearly identified as a subsection of the Conclusions.

(h) *Listing of preparers, and agencies and persons consulted*. Copies of correspondence to and from agencies and persons contacted during the preparation of the EA will be available in the administrative record and may be included in the EA as appendices. In addition, the list of analysts/preparers will be presented.

(i) *References*. These provide bibliographic information for cited sources. Draft documents should not be cited as references without the expressed permission of the proponent of the draft material.

§ 651.35 Decision process.

(a) An EA results in either a FNSI or an NOI to prepare an EIS. Initiation of an NOI to prepare an EIS should occur at any time in the decision process when it is determined that significant effects may occur as a result of the proposed action. The proponent should notify the decision maker of any such determination as soon as possible.

(b) The FNSI is a document (40 CFR 1508.13) that briefly states why an action (not otherwise excluded) will not significantly affect the environment, and, therefore, an EIS will not be prepared. It summarizes the EA, noting any NEPA documents that are related to, but are not part of, the scope of the EA under consideration. If the EA is attached, the FNSI may incorporate the EA's discussion by reference. The draft FNSI will be made available to the public for review and comment for 30 days prior to the initiation of an action (see § 651.14(b)(2)(iii) for an exception). Following the comment period, the decision maker signs the FNSI, and the action can proceed. It is important that the final FNSI reflect the decision made, the response to public comments, and the basis for the final decision.

(c) The FNSI must contain the following:

(1) The name of the action.

(2) A brief description of the action (including any alternatives considered).

(3) A short discussion of the anticipated environmental effects.

(4) The facts and conclusions that have led to the FNSI.

(5) A deadline and POC for further information or receipt of public comments (see § 651.47).

(d) The FNSI is normally no more than two typewritten pages in length.

(e) The draft FNSI will be made available to the public prior to initiation of the proposed action, unless it is a classified action (see § 651.13 for security exclusions). Draft FNSIs that have national interest should be submitted with the proposed press release, along with a Questions and Answers (Q&A) package, through command channels to ASA(I&E) for approval and subsequent publication in the FR. Draft FNSIs having national interest will be coordinated with OCPA. Local publication of the FNSI will not precede the FR publication. The text of the publication should be identical to the FR publication.

(f) For actions of only regional or local interest, the draft FNSI will be publicized in accordance with § 651.14(b)(2). Distribution of the draft FNSI should include any agencies, organizations, and individuals that have expressed interest in the project, those who may be affected, and others deemed appropriate.

(g) Some FNSIs will require the implementation of mitigation measures to reduce potential impacts below significance levels, thereby eliminating the requirement for an EIS. In such instances, the following steps must be taken:

(1) The EA must be made readily available to the public for review through traditional publication and distribution, and through the World Wide Web (WWW) or similar technology. This distribution must be planned to ensure that all appropriate entities and stakeholders have easy access to the material. Ensuring this availability may necessitate the distribution of printed information at locations that are readily accessible and frequented by those who are affected or interested.

(2) Any identified mitigations must be tracked to ensure implementation, similar to those specified in an EIS and ROD.

(3) The EA analysis procedures must be sufficiently rigorous to identify and analyze impacts that are individually or cumulatively significant.

(h) The proponent is responsible for funding the preparation, staffing, and distribution of the draft FNSI and EA package, and the incorporation of public/agency review and comment. The proponent shall also ensure appropriate public and agency meetings, which may be required to facilitate the NEPA process in completing the EA. The decision maker will approve and sign the EA and FNSI documents. Proponents will ensure that the EA and FNSI, to include drafts, are provided in electronic format to allow for maximum information flow throughout the process.

(i) The proponent should ensure that the decision maker is continuously informed of key findings during the EA process, particularly with respect to potential impacts and controversy related to the proposed action.

§ 651.36 Public involvement.

(a) The involvement of other agencies, organizations, and individuals in the development of EAs and EISs enhances collaborative issue identification and problem solving. Such involvement demonstrates that the Army is committed to open decision-making and builds the necessary community trust that sustains the Army in the long term. Public involvement is mandatory for EISs (see § 651.47 and Appendix D of this part for information on public involvement requirements).

(b) Environmental agencies and the public will be involved to the extent practicable in the preparation of an EA. If the proponent elects to involve the public in the development of an EA, § 651.47 and Appendix D of this part may be used as guidance. When considering the extent practicable of public interaction (40 CFR 1501.4(b)), factors to be weighed include:

(1) Magnitude of the proposed project/action.

(2) Extent of anticipated public interest, based on experience with similar proposals.

(3) Urgency of the proposal.

(4) National security classification.

(5) The presence of minority or economically-disadvantaged populations.

(c) Public involvement must begin early in the proposal development stage, and during preparation of an EA. The direct involvement of agencies with jurisdiction or special expertise is an integral part of impact analysis,

and provides information and conclusions for incorporation into EAs. Unclassified documents incorporated by reference into the EA or FNSI are public documents.

(d) Copies of public notices, ''scoping'' letters, EAs, draft FNSIs, FNSIs, and other documents routinely sent to the public will be sent directly to appropriate congressional, state, and district offices.

(e) To ensure early incorporation of the public into the process, a plan to include all interested or affected parties should be developed at the beginning of the analysis and documentation process. Open communication with the public is encouraged as a matter of Army policy, and the degree of public involvement varies. Appropriate public notice of the availability of the completed EA/draft FNSI shall be made (see § 651.35) (see also AR 360–5 (Public Information)). The plan will include the following:

(1) Dissemination of information to local and installation communities.

(2) Invitation and incorporation of public comments on Army actions.

(3) Consultation with appropriate persons and agencies.

(f) Further guidance on public participation requirements (to potentially be used for EAs and EISs, depending on circumstances) is presented in Appendix D of this part.

§ 651.37 Public availability.

Documents incorporated into the EA or FNSI by reference will be available for public review. Where possible, use of public libraries and a list of POCs for supportive documents is encouraged. A depository should be chosen which is open beyond normal business hours. To the extent possible, the WWW should also be used to increase public availability of documents.

§ 651.38 Existing environmental assessments.

EAs are dynamic documents. To ensure that the described setting, actions, and effects remain substantially accurate, the proponent or installation Environmental Officer is encouraged to periodically review existing documentation that is still relevant or supporting current action. If an action is not yet completed, substantial changes in the proposed action may require supplementation, as specified in § 651.5 (g).

§ 651.39 Significance.

(a) If the proposed action may or will result in significant impacts to the environment, an EIS is prepared to provide more comprehensive analyses and conclusions about the impacts. Significant impacts of socioeconomic consequence alone do not merit an EIS.

(b) Significance of impacts is determined by examining both the context and intensity of the proposed action (40 CFR 1508.27). The analysis should establish, by resource category, the threshold at which significance is reached. For example, an action that would violate existing pollution standards; cause water, air, noise, soil, or underground pollution; impair visibility for substantial periods; or cause irreparable harm to animal or plant life could be determined significant. Significant beneficial effects also occur and must be addressed, if applicable.

(c) The proponent should use appropriate methods to identify and ascertain the ''significance'' of impacts. The use of simple analytical tools, which are subject to independent peer review, fully documented, and available to the public, is encouraged.[4] In particular, where impacts are unknown or are suspected to be of public interest, public involvement should be initiated early in the EA (scoping) process.

Subpart F—Environmental Impact Statement

§ 651.40 Introduction.

(a) An EIS is a public document designed to ensure that NEPA policies and goals are incorporated early into the programs and actions of federal agencies. An EIS is intended to provide a full, open, and balanced discussion of significant environmental impacts that

[4] EIFS is one such Army system for evaluating regional economic impacts under NEPA. This system is mandated, as Army policy, for use in NEPA analyses. Other similar tools may be mandated for use in the Army, and will be documented in guidance published pursuant to this part.

may result from a proposed action and alternatives, allowing public review and comment on the proposal and providing a basis for informed decision-making.

(b) The NEPA process should support sound, informed, and timely (early) decision-making; not produce encyclopedic documents. CEQ guidance (40 CFR 1502.7) should be followed, establishing a page limit of 150 pages (300 pages for complex projects). To the extent practicable, EISs will ''incorporate by reference'' any material that is reasonably available for inspection by potentially interested persons within the time allowed for comment. The incorporated material shall be cited in the EIS and its content will be briefly described. Material based on proprietary data, that is itself not available for review and comment, shall not be incorporated by reference.

§ 651.41 Conditions requiring an EIS.

An EIS is required when a proponent, preparer, or approving authority determines that the proposed action has the potential to:

(a) Significantly affect environmental quality, or public health or safety.

(b) Significantly affect historic (listed or eligible for listing in the National Register of Historic Places, maintained by the National Park Service, Department of Interior), or cultural, archaeological, or scientific resources, public parks and recreation areas, wildlife refuge or wilderness areas, wild and scenic rivers, or aquifers.

(c) Significantly impact prime and unique farmlands located off-post, wetlands, floodplains, coastal zones, or ecologically important areas, or other areas of unique or critical environmental sensitivity.

(d) Result in significant or uncertain environmental effects, or unique or unknown environmental risks.

(e) Significantly affect a federally listed threatened or endangered plant or animal species, a federal candidate species, a species proposed for federal listing, or critical habitat.

(f) Either establish a precedent for future action or represent a decision in principle about a future consideration with significant environmental effects.

(g) Adversely interact with other actions with individually insignificant effects so that cumulatively significant environmental effects result.

(h) Involve the production, storage, transportation, use, treatment, and disposal of hazardous or toxic materials that may have significant environmental impact.

(i) Be highly controversial from an environmental standpoint.

(j) Cause loss or destruction of significant scientific, cultural, or historical resources.

§ 651.42 Actions normally requiring an EIS.

The following actions normally require an EIS:

(a) Significant expansion of a military facility or installation.

(b) Construction of facilities that have a significant effect on wetlands, coastal zones, or other areas of critical environmental concern.

(c) The disposal of nuclear materials, munitions, explosives, industrial and military chemicals, and other hazardous or toxic substances that have the potential to cause significant environmental impact.

(d) Land acquisition, leasing, or other actions that may lead to significant changes in land use.

(e) Realignment or stationing of a brigade or larger table of organization equipment (TOE) unit during peacetime (except where the only significant impacts are socioeconomic, with no significant biophysical environmental impact).

(f) Training exercises conducted outside the boundaries of an existing military reservation where significant environmental damage might occur.

(g) Major changes in the mission or facilities either affecting environmentally sensitive resources (see § 651.29(c)) or causing significant environmental impact (see § 651.39).

§ 651.43 Format of the EIS.

The EIS should not exceed 150 pages in length (300 pages for very complex proposals), and must contain the following (detailed content is discussed in appendix E of this part):

(a) Cover sheet.

(b) Summary.

(c) Table of contents.

(d) Purpose of and need for the action.

(e) Alternatives considered, including proposed action and no-action alternative.

(f) Affected environment (baseline conditions) that may be impacted.

(g) Environmental and socioeconomic consequences.

(h) List of preparers.

(i) Distribution list.

(j) Index.

(k) Appendices (as appropriate).

§ 651.44 Incomplete information.

When the proposed action will have significant adverse effects on the human environment, and there is incomplete or unavailable information, the proponent will ensure that the EIS addresses the issue as follows:

(a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the Army will include the information in the EIS.

(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known (for example, the means for obtaining it are beyond the state of the art), the proponent will include in the EIS:

(1) A statement that such information is incomplete or unavailable.

(2) A statement of the relevance of the incomplete or unavailable information to evaluating the reasonably foreseeable significant adverse impacts on the human environment.

(3) A summary of existing credible scientific evidence that is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment.

(4) An evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

§ 651.45 Steps in preparing and processing an EIS.

(a) *NOI.* The NOI initiates the formal scoping process and is prepared by the proponent.

(1) Prior to preparing an EIS, an NOI will be published in the FR and in newspapers with appropriate or general circulation in the areas potentially affected by the proposed action. The OCLL will be notified by the ARSTAF proponent of pending EISs so that congressional coordination may be effected. After the NOI is published in the FR, copies of the notice may also be distributed to agencies, organizations, and individuals, as the responsible official deems appropriate.

(2) The NOI transmittal package includes the NOI, the press release, information for Members of Congress, memorandum for correspondents, and a ''questions and answers'' (Q&A) package. The NOI shall clearly state the proposed action and alternatives, and state why the action may have unknown and/or significant environmental impacts.

(3) The proponent forwards the NOI and the transmittal package to the appropriate HQDA (ARSTAF) proponent for coordination and staffing prior to publication. The ARSTAF proponent will coordinate the NOI with HQDA (ODEP), OCLL, TJAG, OGC, OCPA, relevant MACOMs, and others). Only the Deputy Assistant Secretary of the Army for Environment, Safety, and Occupational Health (DASA(ESOH)) can authorize release of an NOI to the FR for publication, unless that authority has been delegated. A cover letter (similar to Figure 5 in § 651.46) will accompany the NOI. An example NOI is shown in Figure 6 in § 651.46.

(b) *Lead and cooperating agency determination.* As soon as possible after the decision is made to prepare an EIS, the proponent will contact appropriate federal, tribal, state, and local agencies to identify lead or cooperating agency responsibilities concerning EIS preparation. At this point, a public affairs plan must be developed. In the case of State ARNG actions that have federal funding, the NGB will be the lead agency for the purpose of federal compliance with NEPA. The State may be either a

joint lead or a cooperating agency, as determined by NGB.

(c) *Scoping*. The proponent will begin the scoping process described in § 651.48. Portions of the scoping process may take place prior to publication of the NOI.

(d) *DEIS preparation and processing*. Prior to publication of a DEIS, the proponent can prepare a PDEIS, allowing for internal organization and the resolution of internal Army consideration, prior to a formal request for comments.

(1) *PDEIS*. Based on information obtained and decisions made during the scoping process, the proponent may prepare the PDEIS. To expedite headquarters review, a summary document is also required to present the purpose and need for the action, DOPAA, major issues, unresolved issues, major potential controversies, and required mitigations or monitoring. This summary will be forwarded, through the chain of command, to ODEP, the DASA(ESOH), and other interested offices for review and comment. If requested by these offices, a draft PDEIS can be provided following review of the summary. The PDEIS is not normally made available to the public and should be stamped ''For Internal Use Only-Deliberative Process.''

(2) *DEIS*. The Army proponent will advise the DEIS preparer of the number of copies to be forwarded for final HQDA review and those for filing with the EPA. Distribution may include interested congressional delegations and committees, governors, national environmental organizations, the DOD and federal agency headquarters, and other selected entities. The Army proponent will finalize the FR NOA, the proposed news release, and the EPA filing letter for signature of the DASA(ESOH). A revised process summary of the contents (purpose and need for the action, DOPAA, major issues, unresolved issues, major potential controversies, and required mitigations or monitoring) will accompany the DEIS to HQDA for review and comment. If the action has been delegated by the ASA(I&E), only the process summary is required, unless the DEIS is requested by HQDA.

(i) When the DEIS has been formally approved, the preparer can distribute the DEIS to the remainder of the distribution list. The DEIS must be distributed prior to, or simultaneously with, filing with EPA. The list includes federal, state, regional, and local agencies, private citizens, and local organizations. The EPA will publish the NOA in the FR. The 45-day comment period begins on the date of the EPA notice in the FR.

(ii) Following approval, the proponent will forward five copies of the DEIS to EPA for filing and notice in the FR; publication of EPA's NWR commences the public comment period. The proponent will distribute the DEIS prior to, or simultaneously with, filing with EPA. Distribution will include appropriate federal, state, regional, and local agencies; Native American tribes; and organizations and private citizens who have expressed interest in the proposed action.

(iii) For proposed actions that are environmentally controversial, or of national interest, the OCLL shall be notified of the pending action so that appropriate congressional coordination may be effected. The OCPA will coordinate public announcements through its chain of command. Proponents will ensure that the DEIS and subsequent NEPA documents are provided in electronic format to allow for maximum information flow throughout the process.

(e) *Public review of DEIS*. The DEIS public comment period will be no less than 45 days. If the statement is unusually long, a summary of the DEIS may be circulated, with an attached list of locations where the entire DEIS may be reviewed (for example, local public libraries). Distribution of the complete DEIS should be accompanied by the announcement of availability in established newspapers of major circulation, and must include the following:

(1) Any federal agency that has jurisdiction by law or special expertise with respect to any environmental impact involved and any appropriate federal, state, or local agency authorized to develop and enforce environmental standards.

(2) The applicant, if the proposed action involves any application of proposal for the use of Army resources.

(3) Any person, organization, or agency requesting the entire DEIS.

(4) Any Indian tribes, Native Alaskan organizations, or Native Hawaiian organizations potentially impacted by the proposed action.

(5) Chairs/co-chairs of any existing citizen advisory groups (for example, Restoration Advisory Boards).

(f) *Public meetings or hearings.* Public meetings or hearings on the DEIS will be held in accordance with the criteria established in 40 CFR 1506.6(c) and (d) or for any other reason the proponent deems appropriate. News releases should be prepared and issued to publicize the meetings or hearings at least 15 days prior to the meeting.

(g) *Response to comments.* Comments will be incorporated in the DEIS by modification of the text and/or written explanation. Where possible, similar comments will be grouped for a common response. The preparer or a higher authority may make individual response, if considered desirable.

(h) *The FEIS.* If the changes to the DEIS are exclusively clarifications or minor factual corrections, a document consisting of only the DEIS comments, responses to the comments, and errata sheets may be prepared and circulated. If such an abbreviated FEIS is anticipated, the DEIS should contain a statement advising reviewers to keep the document so they will have a complete set of ''final'' documents. The final EIS to be filed with EPA will consist of a complete document containing a new cover sheet, the errata sheets, comments and responses, and the text of the draft EIS. Coordination, approval, filing, and public notice of an abbreviated FEIS are the same as for a draft DEIS. If extensive modifications are warranted, the proponent will prepare a new, complete FEIS. Preparation, coordination, approval, filing, and public notice of the FEIS are the same as the process outlined for the DEIS. The FEIS distribution must include any person, organization, or agency that submitted substantive comments on the DEIS. One copy (electronic) of the FEIS will be forwarded to ODEP. The FEIS will clearly identify the Army's preferred alternative unless prohibited by law.

(i) *Decision.* No decision will be made on a proposed action until 30 days after EPA has published the NWR of the FEIS in the FR, or 90 days after the NWR of the DEIS, whichever is later. EPA publishes NWRs weekly. Those NWRs ready for EPA by close of business Friday are published in the next Friday's issue of the FR.

(j) *ROD.* The ROD documents the decision made and the basis for that decision.

(1) The proponent will prepare a ROD for the decision maker's signature, which will:

(i) Clearly state the decision by describing it in sufficient detail to address the significant issues and ensure necessary long-term monitoring and execution.

(ii) Identify all alternatives considered by the Army in reaching its decision, specifying the environmentally preferred alternative(s). The Army will discuss preferences among alternatives based on relevant factors including environmental, economic, and technical considerations and agency statutory missions.

(iii) Identify and discuss all such factors, including any essential considerations of national policy that were balanced by the Army in making its decision. Because economic and technical analyses are balanced with environmental analysis, the agency preferred alternative will not necessarily be the environmentally preferred alternative.

(iv) Discuss how those considerations entered into the final decision.

(v) State whether all practicable means to avoid or minimize environmental harm from the selected alternative have been adopted, and if not, why they were not.

(vi) Identify or incorporate by reference the mitigation measures that were incorporated into the decision.

(2) Implementation of the decision may begin immediately after approval of the ROD.

(3) The proponent will prepare an NOA to be published in the FR by the HQDA proponent, following congressional notification. Processing and approval of the NOA is the same as for an NOI.

(4) RODs will be distributed to agencies with authority or oversight over aspects of the proposal, cooperating agencies, appropriate congressional, state, and district offices, all parties that are directly affected, and others upon request.

(5) One electronic copy of the ROD will be forwarded to ODEP.

(6) A monitoring and enforcement program will be adopted and summarized for any mitigation (see Appendix C of this part).

(k) *Pre-decision referrals.* 40 CFR part 1504 specifies procedures to resolve federal agency disagreements on the environmental effects of a proposed action. Pre-decision referrals apply to interagency disagreement on a proposed action's potential unsatisfactory effects.

(l) *Changes during preparation.* If there are substantial changes in the proposed action, or significant new information relevant to environmental concerns during the proposed action's planning process, the proponent will prepare revisions or a supplement to any environmental document or prepare new documentation as necessary.

(m) *Mitigation.* All measures planned to minimize or mitigate expected significant environmental impacts will be identified in the EIS and the ROD. Implementation of the mitigation plan is the responsibility of the proponent (see Appendix C of this part). The proponent will make available to the public, upon request, the status and results of mitigation measures associated with the proposed action. For weapon system acquisition programs, the proponent will coordinate with the appropriate responsible parties before identifying potential mitigations in the EIS/ROD.

(n) *Implementing the decision.* The proponent will provide for monitoring to assure that decisions are carried out, particularly in controversial cases or environmentally sensitive areas (Appendix C of this part). Mitigation and other conditions that have been identified in the EIS, or during its review and comment period, and made part of the decision (and ROD), will be implemented by the lead agency or other appropriate consenting agency. The proponent will:

(1) Include appropriate conditions in grants, permits, or other approvals.

(2) Ensure that the proponent's project budget includes provisions for mitigations.

(3) Upon request, inform cooperating or commenting agencies on the progress in carrying out adopted mitigation measures that they have proposed and that were adopted by the agency making the decision.

(4) Upon request, make the results of relevant monitoring available to the public and Congress.

(5) Make results of relevant monitoring available to citizens advisory groups, and others that expressed such interest during the EIS process.

§ 651.46 Existing EISs.

A newly proposed action must be the subject of a separate EIS. The proponent may extract and revise the existing environmental documents in such a way as to bring them completely up to date, in light of the new proposals. Such a revised EIS will be prepared and processed entirely under the provisions of this part. If an EIS of another agency is adopted, it must be processed in accordance with 40 CFR 1506.3. Figures 4 through 8 to Subpart F of part 651 follow:

FIGURES 4 THROUGH 8 TO SUBPART F OF PART 651

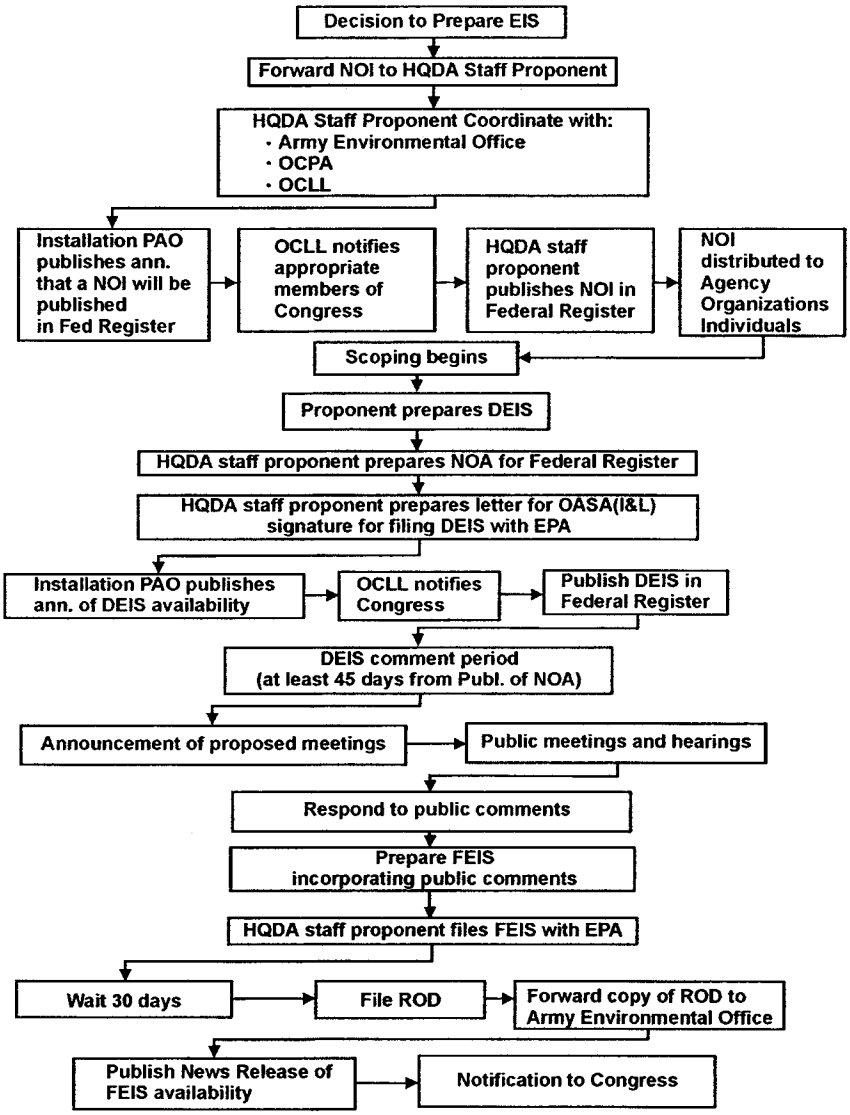

Figure 4. Steps in preparing and processing an environmental impact statement.

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
INSTALLATIONS LOGISTICS AND ENVIRONMENT
110 ARMY PENTAGON
WASHINGTON DC 20310-0110

January 14, 1999

Director
Office of the Federal Register
National Archives and Records
Administration
Washington, D. C. 20408

Dear Sir:

The enclosed notice of intent (NOI) to prepare an Environmental Impact Statement for the Fort Sill Real Property Master Plan is submitted for publication in the Notice section of the Federal Register.

Please publish this NOI in the earliest possible edition of the Federal Register. This notice is required for the Department of the Army to perform its military mission and to comply with the National Environmental Policy Act and the President's Council on Environmental Quality regulations.

To confirm publication date of this notice or for further information, please contact Mr. Greg Brewer at (703) 692-9220.

Please bill this to charge code 3710-08-M.

Sincerely,

Raymond J. Fatz
Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational Health)
OASA(I,L&E)

Enclosure

Figure 5. Sample Notice of Intent Transmittal Letter.

DEPARTMENT OF DEFENSE

Department of the Army

Notice of Intent to Prepare a Programmatic Environmental Impact Statement for the Real Property Master Plan, Fort Sill, Okla.

AGENCY: Department of the Army, DOD

ACTION: Notice of Intent

SUMMARY: This announced the intention of the U.S. Army Field Artillery Center and Fort Sill, Fort Sill, Okla., to prepare an Environmental Impact Statement (EIS) in support of revisions to the installations' Real Property Master Plan (RPMP). The purpose is to evaluate the environmental impacts associated with the RPMP's implementation.

ADDRESSES: Written comments may be forwarded to the U.S. Army Corps of Engineers, ATTN: CESWT-PE-E (J. Randolph), P.O. Box 61, Tulsa, Okla. 74121-0061.

FOR FURTHER INFORMATION CONTACT: Mr. Bob Kerr, Directorate of Environmental Quality, U.S. Army Field Artillery Center and Fort Sill, at (580) 442-3409.

SUPPLEMENTARY INFORMATION: The Fort Sill RPMP has the potential to significantly impact certain natural, economic, social, and cultural resources of the Fort Sill community. The study area for environmental analysis will be the entire Fort Sill installation. The objective is to provide a comprehensive and programmatic EIS that will serve as a planning tool, a public information source, and a reference for mitigation tracking.

Alternatives may consist of alternative locations for specific projects, partial implementation of the specific project, or other modifications of the specific project. The alternatives will be developed during preparation of the Draft EIS (DEIS) as a result of pubic input and of environmental analysis of the proposals within the plan.

SIGNIFICANT ISSUES: The Fort Sill reservation contains approximately 94,221 acres of land. Some of this land serves as potential habitat for protected species of wildlife. Of the areas within the installation that have been surveyed to date for cultural resources, 832 properties have been identified and recorded. Nearly all of the current and proposed RPMP projects are sited with the 6,015 acre cantonment area, where the majority of the installation's historic buildings are located.

The significant issues the EIS will analyze will include the following:

1. Development of a large deployment marshaling area near an existing railhead facility; Whereby, new railroad tracks, loading docks, switching facilities, hardstand areas, and fencing would be developed.

2. Redesignation of land use: Whereby, land use zoning would be redesignated to provide for the construction of new and expansion of existing motor pool areas.

3. Probably construction projects: Whereby, the following projects would be complete: (1) new multiple launch rocket system (MLRS) range firing points in the training areas; (2) a liquid fuel facility; (3) a unit movements facility; and (4) a contingency warehouse.

Public scoping meetings will be held in the vicinity of Fort Sill to facilitate input to the EIS process by citizens and organizations. The date and time of these meetings will be announced in general media and will be at times and locations convenient to the public. To be considered in the Draft EIS, comments and suggestions should be received no later than 15 days following the public scoping meeting.

DATED: January 14, 1999

Raymond J. Fatz
Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational Health)
OASA(I&E)

Figure 6. Sample of Notice of Intent.

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
INSTALLATIONS LOGISTICS AND ENVIRONMENT
110 ARMY PENTAGON
WASHINGTON DC 20310-0110

March 25, 1999

Director
Office of Federal Activities
U. S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, D. C. 20044

Dear Sir:

Enclosed are five copies of the Draft Environmental Impact Statement for the Disposal and Reuse of the Military Ocean Terminal, Bayonne, New Jersey.

These copies are forwarded for filing in accordance with the President's Council on Environmental Quality regulations for implementing the provisions of the national Environmental Policy Act (40 CFR, Parts 1500-1508).

The point of contact for this action is Ms. Theresa Persick-Arnold at (703) 697-0216.

Sincerely,

Raymond J. Fatz
Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational Health)
OASA(I&E)

Enclosures

Figure 7. Sample Letter of Transmittal of Draft Environmental Impact Statement to the Environmental Protection Agency.

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
INSTALLATIONS LOGISTICS AND ENVIRONMENT
110 ARMY PENTAGON
WASHINGTON DC 20310-0110

March 25, 1999

MEMORANDUM FOR DEPUTY UNDER SECRETARY OF DEFENSE
(ENVIRONMENTAL SECURITY)

SUBJECT: Notice of Availability (NOA) of the Draft Environmental Impact Statement (DEIS) for the Disposal and Reuse of the Military Ocean Terminal, Bayonne (MOTBY), New Jersey

In accordance with Department of Defense Instruction 4715.9, Environmental Planning and Analysis, enclosed is a copy of the NOA of the DEIS on the disposal and reuse of MOTBY.

Point of contact for this action is Ms. Theresa Persick-Arnold at 697-0216.

Raymond J. Fatz
Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational Health)
OASA(I&E)

Enclosure

Figure 8. Sample Letter of Transmittal of Draft Environmental Impact Statement to the Office of the Secretary of Defense

Subpart G—Public Involvement and the Scoping Process

§ 651.47 Public involvement.

(a) As a matter of Army policy, public involvement is required for all EISs, and is strongly encouraged for all Army actions, including EAs. The requirement (40 CFR 1506.6) for public involvement recognizes that all potentially interested or affected parties will be involved, when practicable, whenever analyzing environmental considerations. This requirement can be met at the very beginning of the process by developing a plan to include all affected parties and implementing the plan with appropriate adjustments as it proceeds (AR 360–5). The plan will include the following:

(1) Information dissemination to local and installation communities through such means as news releases to local media, announcements to local citizens groups, and Commander's letters at each phase or milestone (more frequently if needed) of the project. The dissemination of this information will be based on the needs and desires of the local communities.

(2) Each phase or milestone (more frequently if needed) of the project will be coordinated with representatives of local, state, tribal, and federal government agencies.

(3) Public comments will be invited and two-way communication channels

will be kept open through various means as stated above. These two-way channels will be dynamic in nature, and should be updated regularly to reflect the needs of the local community.

(4) Public affairs officers at all levels will be kept informed.

(b) When an EIS is being prepared, public involvement is a requisite element of the scoping process (40 CFR 1501.7(a)(1)).

(c) Proponents will invite public involvement in the review and comment of EAs and draft FNSIs (40 CFR 1506.6).

(d) Persons and agencies to be consulted include the following:

(1) Municipal, township, and county elected and appointed officials.

(2) Tribal, state, county, and local government officials and administrative personnel whose official duties include responsibility for activities or components of the affected environment related to the proposed Army action.

(3) Local and regional administrators of other federal agencies or commissions that may either control resources potentially affected by the proposed action (for example, the U.S. Fish and Wildlife Service); or who may be aware of other actions by different federal agencies whose effects must be considered with the proposed Army action (for example, the GSA).

(4) Members of existing citizen advisory groups, such as Restoration Advisory Boards and Citizen Advisory Commissions.

(5) Members of identifiable population segments within the potentially affected environments, whether or not they have clearly identifiable leaders or an established organization, such as farmers and ranchers, homeowners, small business owners, minority communities and disadvantaged communities, and tribal governments in accordance with White House Memorandum on Government to Government Relations with Native American Tribal Governments (April 29, 1994).

(6) Members and officials of those identifiable interest groups of local or national scope that may have interest in the environmental effects of the proposed action or activity (for example, hunters and fishermen, Izaak Walton League, Sierra Club, and the Audubon Society).

(7) Any person or group that has specifically requested involvement in the specific action or similar actions.

(e) The public involvement processes and procedures through which participation may be solicited include the following:

(1) Direct individual contact. Such interaction can identify persons and their opinions and initial positions, affecting the scope of issues that the EIS must address. Such limited contact may satisfy public involvement requirements when the expected significance and controversy of environmental effects is very limited.

(2) Small workshops or discussion groups.

(3) Larger public gatherings that are held after some formulation of the potential issues. The public is invited to express its views on the proposed courses of action. Public suggestions or alternative courses of action not already identified may be expressed at these gatherings that need not be formal public hearings.

(4) Identifying and applying other processes and procedures to accomplish the appropriate level of public involvement.

(f) The meetings described in paragraph (e) of this section should not be public hearings in the early stages of evaluating a proposed action. Public hearings do not substitute for the full range of public involvement procedures under the purposes and intent, as described in paragraph (e) of this section.

(g) Public surveys or polls may be performed to identify public opinion of a proposed action, as appropriate (AR 335–15).

§ 651.48 Scoping process.

(a) The scoping process (40 CFR 1501.7) is intended to aid in determining the scope of the analyses and significant issues related to the proposed action. The process requires appropriate public participation immediately following publication of the NOI in the FR. It is important to note that scoping is not synonymous with a public meeting. The Army policy is that EISs for legislative proposals significantly affecting the environment will

go through scoping unless extenuating circumstances make it impractical. In some cases, the scoping process may be useful in the preparation of EAs and should be employed when it is useful.

(b) The scoping process identifies relevant issues related to a proposed action through the involvement of all potentially interested or affected parties (affected federal, state, and local agencies; recognized Indian tribes; interest groups, and other interested persons) in the environmental analysis and documentation. This process should:

(1) Eliminate issues from detailed consideration which are not significant, or which have been covered by prior environmental review; and

(2) Make the analysis and documentation more efficient by providing focus to the effort. Proper scoping identifies reasonable alternatives and the information needed for their evaluation, thereby increasing public confidence in the Army decisionmaking process.

(c) Proper scoping will reduce both costs and time required for an EA or EIS. This is done through the documentation of all potential impacts and the focus of detailed consideration on those aspects of the action which are potentially significant or controversial. To assist in this process the Army will use the Environmental Impact Computer System (EICS) starting in Fiscal Year (FY) 04, as appropriate. This system will serve to structure all three stages of the scoping process (§ 651.49, 651.50, and 651.51) and provide focus on those actions that are important and of interest to the public. While these discussions focus on EIS preparation and documents to support that process, the three phases also apply if scoping is used for an EA. If used in the preparation of an EA, scoping, and documents to support that process, can be modified and adopted to ensure efficient public iteration and input to the decision-making process.

(d) When the planning for a project or action indicates the need for an EIS, the proponent initiates the scoping process to identify the range of actions, alternatives, and impacts for consideration in the EIS (40 CFR 1508.25). The extent of the scoping process (including public involvement) will depend upon:

(1) The size and type of the proposed action.

(2) Whether the proposed action is of regional or national interest.

(3) Degree of any associated environmental controversy.

(4) Importance of the affected environmental parameters.

(5) Significance of any effects on them.

(6) Extent of prior environmental review.

(7) Involvement of any substantive time limits.

(8) Requirements by other laws for environmental review.

(e) The proponent may incorporate scoping in the public involvement (or environmental review) process of other requirements, such as an EA. In such cases, the extent of incorporation is at the discretion of the proponent, working with the affected Army organization or installation. Such integration is encouraged.

(f) Scoping procedures fall into preliminary, public interaction, and final phases. These phases are discussed in §§ 651.49, 651.50, and 651.51, respectively.

§ 651.49 Preliminary phase.

In the preliminary phase, the proponent agency or office identifies, as early as possible, how it will accomplish scoping and with whose involvement. Key points will be identified or briefly summarized by the proponent, as appropriate, in the NOI, which will:

(a) Identify the significant issues to be analyzed in the EIS.

(b) Identify the office or person responsible for matters related to the scoping process. If they are not the same as the proponent of the action, that distinction will be made.

(c) Identify the lead and cooperating agency, if already determined (40 CFR 1501.5 and 1501.6).

(d) Identify the method by which the agency will invite participation of affected parties, and identify a tentative list of the affected parties to be notified. A key part of this preliminary identification is to solicit input regarding other parties who would be interested in the proposed project or affected by it.

(e) Identify the proposed method for accomplishing the scoping procedure.

(f) Indicate the relationship between the timing of the preparation of environmental analyses and the tentative planning and decisionmaking schedule including:

(1) The scoping process itself.

(2) Collection or analysis of environmental data, including required studies.

(3) Preparation of draft and final EISs (DEISs and FEISs), and associated review periods.

(4) Filing of the ROD.

(5) Taking the action.

(6) For a programmatic EIS, preparation of a general expected schedule for future specific implementing (tiered) actions that will involve separate environmental analysis.

(g) If applicable, identify the extent to which the EIS preparation process is exempt from any of the normal procedural requirements of this part, including scoping.

§ 651.50 Public interaction phase.

(a) During this portion of the process, the proponent will invite comments from all affected parties and respondents to the NOI to assist in developing issues for detailed discussion in the EIS. Assistance in identifying possible participants is available from the ODEP.

(b) In addition to the affected parties identified in paragraph (a) of this section, participants should include the following:

(1) Technical representatives of the proponent. Such persons must be able to describe the technical aspects of the proposed action and alternatives to other participants.

(2) One or more representatives of any Army-contracted consulting firm, if one has been retained to participate in writing the EIS or providing reports that the Army will use to create substantial portions of the EIS.

(3) Experts in various environmental disciplines, in any technical area where foreseen impacts are not already represented among the other scoping participants.

(c) In all cases, the participants will be provided with information developed during the preliminary phase and with as much of the following information that may be available:

(1) A brief description of the environment at the affected location. When descriptions for a specific location are not available, general descriptions of the probable environmental effects will be provided. This will also address the extent to which the environment has been modified or affected in the past.

(2) A description of the proposed alternatives. The description will be sufficiently detailed to enable evaluation of the range of impacts that may be caused by the proposed action and alternatives. The amount of detail that is sufficient will depend on the stage of the development of the proposal, its magnitude, and its similarity to other actions with which participants may be familiar.

(3) A tentative identification of ''any public environmental assessments and other environmental impact statements that are being or will be prepared that are related to but are not part of the scope of the impact statement under consideration'' (40 CFR 1501.7(a)(5)).

(4) Any additional scoping issues or limitations on the EIS, if not already described during the preliminary phase.

(d) The public involvement should begin with the NOI to publish an EIS. The NOI may indicate when and where a scoping meeting will take place and who to contact to receive preliminary information. The scoping meeting is an informal public meeting, and initiates a continuous scoping process, allowing the Army to scope the action and the impacts of alternatives. It is a working session where the gathering and evaluation of information relating to potential environmental impacts can be initiated.

(e) Starting with this information (paragraph (d) of this section), the person conducting the scoping process will use input from any of the involved or affected parties. This will aid in developing the conclusions. The proponent determines the final scope of the EIS. If the proponent chooses not to require detailed treatment of significant issues or factors in the EIS, in spite of relevant technical or scientific objections by any participant, the proponent will

clearly identify (in the environmental consequences section of the EIS) the criteria that were used to eliminate such factors.

§ 651.51 The final phase.

(a) The initial scope of the DEIS is determined by the proponent during and after the public interaction phase of the process. Detailed analysis should focus on significant issues (40 CFR 1501.7(a)(2)). To determine the appropriate scope, the proponent must consider three categories of actions, alternatives, and impacts.

(1) The three categories of actions (other than unconnected single actions) are as follows:

(i) Connected actions are those that are closely related and should be discussed in the same impact statement. Actions are connected if they automatically trigger other actions that may require EISs, cannot or will not proceed unless other actions are previously or simultaneously taken, are interdependent parts of a larger action, and depend on the larger action for their justification.

(ii) Cumulative actions are those that, when viewed with other past and proposed actions, have cumulatively significant impacts and should be discussed in the same impact statement.

(iii) Similar actions are those that have similarities which provide a basis for evaluating their environmental consequences together, such as common timing or geography, and may be analyzed in the EIS. Agencies should do so when the best way to assess such actions is to treat them in a single EIS.

(2) The three categories of alternatives are as follows:

(i) No action.

(ii) Other reasonable courses of action.

(iii) Mitigation measures (not in the proposed action).

(3) The three categories of impacts are as follows:

(i) Direct.

(ii) Indirect.

(iii) Cumulative.

(4) The proponent can also identify any public EAs and EISs, prepared by the Army or another federal agency, related to, but not part of, the EIS under consideration (40 CFR 1501.7(a)(5)). Assignments for the preparation of the EIS among the lead and any cooperating agencies can be identified, with the lead agency retaining responsibility for the statement (40 CFR 1501.7(a)(4)); along with the identification of any other environmental review and consultation requirements so the lead and cooperating agencies may prepare other required analyses and studies concurrently with the EIS (40 CFR 1501.7(a)(6)).

(b) The identification and elimination of issues that are insignificant, non-controversial, or covered by prior environmental review can narrow the analysis to remaining issues and their significance through reference to their coverage elsewhere (40 CFR 1501.7(a)(3)).

(c) As part of the scoping process, the lead agency may:

(1) Set time limits, as provided in § 651.14(b), if they were not already indicated in the preliminary phase.

(2) Prescribe overall page limits for the EIS in accordance with the CEQ regulations that emphasize conciseness.

(d) All determinations reached by the proponent during the scoping process will be clearly conveyed to the preparers of the EIS in a Scope of Statement. The Scope of Statement will be made available to participants in the scoping process and to other interested parties upon request. Any scientific or technical conflicts that arise between the proponent and scoping participants, cooperating agencies, other federal agencies, or preparers will be identified during the scoping process and resolved or discussed by the proponent in the DEIS.

§ 651.52 Aids to information gathering.

The proponent may use or develop graphic or other innovative methods to aid information gathering, presentation, and transfer during the three scoping phases. These include methods for presenting preliminary information to scoping participants, obtaining and consolidating input from participants, and organizing determinations on scope for use during preparation of the DEIS. The use of the World Wide Web

(WWW) for these purposes is encouraged. Suggested uses include the implementation of a continuous scoping process, facilitating ''virtual'' public participation, as well as the dissemination of analyses and information as they evolve.

§ 651.53 Modifications of the scoping process.

(a) If a lengthy period exists between a decision to prepare an EIS and the time of preparation, the proponent will initiate the NOI at a reasonable time in advance of preparation of the DEIS. The NOI will state any tentative conclusions regarding the scope of the EIS made prior to publication of the NOI. Reasonable time for public participation will be allowed before the proponent makes any final decisions or commitments on the EIS.

(b) The proponent of a proposed action may use scoping during preparation of environmental review documents other than an EIS, if desired. In such cases, the proponent may use these procedures or may develop modified procedures, as needed.

Subpart H—Environmental Effects of Major Army Action Abroad

§ 651.54 Introduction.

(a) Protection of the environment is an Army priority, no matter where the Army actions are undertaken. The Army is committed to pursuing an active role in addressing environmental quality issues in Army relations with neighboring communities and assuring that consideration of the environment is an integral part of all decisions. This section assigns responsibilities for review of environmental effects abroad of major Army actions, as required by Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, dated January 4, 1979, 3 CFR, 1979 Comp.,p.356. This section applies to HQDA and Army agencies' actions that would significantly affect the quality of the human environment outside the United States.

(b) Executive Order 12114 and DODD 6050.7, Environmental Effects Abroad of Major Department of Defense Actions (planned currently to be replaced by a DODI, Analyzing Defense Actions With the Potential for Significant Impacts Outside the United States) provide guidance for analyzing the environmental impacts of Army actions abroad and in the global commons. Army components will, consistent with diplomatic factors (including applicable Status of Forces Agreements (SOFAs) and stationing agreements), national security considerations, and difficulties of obtaining information, document the review of potential environmental impacts of Army actions abroad and in the global commons as set forth in DODD 6050.7 (or DODI upon publication). The analysis and documentation of potential environmental impacts of Army actions abroad and in the global commons should, to the maximum extent possible, be incorporated into existing decision-making processes; planning for military exercises, training plans, and military operations.

§ 651.55 Categorical exclusions.

The list of CXs in Appendix B of this part may be used in reviewing potential environmental impacts of major actions abroad and in the global commons, in accordance with DODD 6050.7 (or DODI upon publication) and Executive Order 12114, section 2–5(c).

§ 651.56 Responsibilities.

(a) The ASA(I&E) will:

(1) Serve as the Secretary of the Army's responsible official for environmental matters abroad.

(2) Maintain liaison with the DUSD(IE) on matters concerning Executive Order 12114, DODD 6050.7, and this part.

(3) Coordinate actions with other Secretariat offices as appropriate.

(b) The DEP will:

(1) Serve as ARSTAF proponent for implementation of Executive Order 12114, DODD 6050.7, and this part.

(2) Apply this part when planning and executing overseas actions, where appropriate in light of applicable statutes and SOFAs.

(c) The DCSOPS will:

(1) Serve as the focal point on the ARSTAF for integrating environmental considerations required by Executive Order 12114 into Army plans and activities. Emphasis will be placed

on those actions reasonably expected to have widespread, long-term, and severe impacts on the global commons or the territories of foreign nations.

(2) Consult with the Office of Foreign Military Rights Affairs of the Assistant Secretary of Defense (International Security Affairs) (ASD(ISA)) on significant or sensitive actions affecting relations with another nation.

(d) TJAG, in coordination with the OGC, will provide advice and assistance concerning the requirements of Executive Order 12114 and DODD 6050.7.

(e) The Chief of Public Affairs will provide advice and assistance on public affairs as necessary.

APPENDIX A TO PART 651—REFERENCES

Military publications and forms are accessible from a variety of sources through the use of electronic media or paper products. In most cases, electronic publications and forms that are associated with military organizations can be accessed at various address or web sites on the Internet. Since electronic addresses can frequently change, or similar web links can also be modified at several locations on the Internet, it's advisable to access those sites using a search engine that is most accommodative, yet beneficial to the user. Additionally, in an effort to facilitate the public right to information, certain publications can also be purchased through the National Technical Information Service (NTIS). Persons interested in obtaining certain types of publications can write to the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

Section I—Required Publications

AR 360–5

Army Public Affairs, Public Information.

Section II—Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this part.

AR 5–10

Reduction and Realignment Actions.

AR 11–27

Army Energy Program.

AR 95–50

Airspace and Special Military Operation Requirements.

AR 140–475

Real Estate Selection and Acquisition: Procedures and Criteria.

AR 200–1

Environmental Protection and Enhancement.

AR 200–3

Natural Resources—Land, Forest, and Wildlife Management.

AR 200–4

Cultural Resources Management.

AR 210–10

Administration.

AR 210–20

Master Planning for Army Installations.

AR 335–15

Management Information Control System.

AR 380–5

Department of the Army Information Security Program.

AR 385–10

Army Safety Program.

AR 530–1

Operations Security (OPSEC).

DA PAM 70–3

Army Acquisition Procedures.

Defense Acquisition Deskbook

An electronic knowledge presentation system available through the Deputy Under Secretary of Defense (Acquisition Reform) and the Office of the Under Secretary of Defense (Acquisition and Technology).

DOD 5000.2–R

Mandatory Procedures for Major Defense Acquisition Programs and Major Automated Information Systems.

DODD 4100.15

Commercial Activities Program.

DODD 4700.4

Natural Resources Management Program, Integrated Natural Resources Management Plan (INRMP), Integrated Cultural Resources Management Plan (ICRMP).

DODD 6050.7

Environmental Effects Abroad of Major Department of Defense Actions.

DODI 4715.9

Environmental Planning and Analysis

Executive Order 11988

Floodplain Management, 3 CFR, 1977 Comp., p. 117

Executive Order 11990

Protection of Wetlands, 3 CFR, 1977 Comp., p. 121.

Executive Order 12114

Environmental Effects Abroad of Major Federal Actions, 3 CFR, 1979 comp., p. 356.

Executive Order 12778

Civil Justice Reform, 3 CFR, 1991 Comp., p. 359.

Executive Order 12856

Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, 3 CFR, 1993 Comp., p. 616.

Executive Order 12861

Elimination of One-Half of Executive Branch Internal Regulations, 3 CFR, 1993 Comp., p. 630.

Executive Order 12866

Regulatory Planning and Review, 3 CFR, 1993 Comp., p. 638.

Executive Order 12898

Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, 3 CFR, 1994 Comp., p. 859.

Executive Order 13007

Indian Sacred Sites, 3 CFR, 1996 Comp., p. 196.

Executive Order 13045

Protection of Children from Environmental Health Risks and Safety Risks, 3 CFR, 1997 Comp., p. 198.

Executive Order 13061

Federal Support of Community Efforts Along American Heritage Rivers, 3 CFR, 1997 Comp., p. 221.

Executive Order 13083

Federalism, 3 CFR, 1998 Comp., p. 146.

Public Laws: American Indian Religious Freedom Act.

42 U.S.C. 1996.

Clean Air Act

As amended (42 U.S.C. 7401, *et seq.*).

Clean Water Act of 1977

Public Law 95–217, 91 Stat. 1566 and Public Law 96–148, Sec. 1(a)–(c), 93 Stat. 1088.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

As amended (CERCLA, Superfund) (42 U.S.C. 9601 *et seq.*) Endangered Species Act of 1973.

Public Law 93–205, 87 Stat. 884.

Fish and Wildlife Coordination Act

Public Law 85–624, Sec. 2, 72 Stat. 563 and Public Law 89–72, Sec. 6(b), 79 Stat. 216.

National Environmental Policy Act of 1969

Public Law 91–190, 83 Stat. 852.

National Historic Preservation Act

Public Law 89–665, 80 Stat. 915.

Native American Graves Protection and Repatriation Act

Public Law 101–601, 104 Stat. 3048.

Pollution Prevention Act of 1990

Public Law 101–508, Title VI, Subtitle G, 104 Stat. 13880–321.

Resource Conservation and Recovery Act of 1976

Public Law 94–580, 90 Stat. 2795.

Sikes Act

Public Law 86–797, 74 Stat. 1052.

NOTE. The following CFRs may be found in your legal office or law library. Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington, DC 20401.

36 CFR Part 800

Advisory Council on Historic Preservation.

40 CFR Parts 1500–1508

Council on Environmental Quality.

Section III—Prescribed Forms

This section contains no entries.

Section IV—Referenced Forms

DA Form 2028

Recommended Changes to Publications and Blank Forms.

DD Form 1391

Military Construction Project Data.

APPENDIX B TO PART 651—CATEGORICAL EXCLUSIONS

Section I—Screening Criteria

Before any CXs can be used, Screening Criteria as referenced in §651.29 must be met.

Section II—List of CXs

(a) For convenience only, the CXs are grouped under common types of activities

(for example, administration/ operation, construction/demolition, and repair and maintenance). Certain CXs require a REC, which will be completed and signed by the proponent. Concurrence on the use of a CX is required from the appropriate environmental officer (EO), and that signature is required on the REC. The list of CXs is subject to continual review and modification. Requests for additions or changes to the CXs (along with justification) should be sent, through channels, to the ASA (I&E). Subordinate Army headquarters may not modify the CX list through supplements to this part. Proposed modifications to the list of CXs will be published in the FR by HQDA, to provide opportunity for public comment.

(b) Administration/operation activities:

(1) Routine law and order activities performed by military/military police and physical plant protection and security personnel, and civilian natural resources and environmental law officers.

(2) Emergency or disaster assistance provided to federal, state, or local entities (REC required).

(3) Preparation of regulations, procedures, manuals, and other guidance documents that implement, without substantive change, the applicable HQDA or other federal agency regulations, procedures, manuals, and other guidance documents that have been environmentally evaluated (subject to previous NEPA review).

(4) Proposed activities and operations to be conducted in an existing non-historic structure which are within the scope and compatibility of the present functional use of the building, will not result in a substantial increase in waste discharged to the environment, will not result in substantially different waste discharges from current or previous activities, and emissions will remain within established permit limits, if any (REC required).

(5) Normal personnel, fiscal, and administrative activities involving military and civilian personnel (recruiting, processing, paying, and records keeping).

(6) Routinely conducted recreation and welfare activities not involving off-road recreational vehicles.

(7) Deployment of military units on a temporary duty (TDY) or training basis where existing facilities are used for their intended purposes consistent with the scope and size of existing mission.

(8) Preparation of administrative or personnel-related studies, reports, or investigations.

(9) Approval of asbestos or lead-based paint management plans drafted in accordance with applicable laws and regulations (REC required).

(10) Non-construction activities in support of other agencies/organizations involving community participation projects and law enforcement activities.

(11) Ceremonies, funerals, and concerts. This includes events such as state funerals, to include flyovers.

(12) Reductions and realignments of civilian and/or military personnel that: fall below the thresholds for reportable actions as prescribed by statute (10 U.S.C. 2687) and do not involve related activities such as construction, renovation, or demolition activities that would otherwise require an EA or an EIS to implement (REC required). This includes reorganizations and reassignments with no changes in force structure, unit redesignations, and routine administrative reorganizations and consolidations (REC required).

(13) Actions affecting Army property that fall under another federal agency's list of categorical exclusions when the other federal agency is the lead agency (decision maker), or joint actions on another federal agency's property that fall under that agency's list of categorical exclusions (REC required).

(14) Relocation of personnel into existing federally-owned (or state-owned in the case of ARNG) or commercially-leased space, which does not involve a substantial change in the supporting infrastructure (for example, an increase in vehicular traffic beyond the capacity of the supporting road network to accommodate such an increase is an example of substantial change) (REC required).

(c) Construction and demolition:

(1) Construction of an addition to an existing structure or new construction on a previously undisturbed site if the area to be disturbed has no more than 5.0 cumulative acres of new surface disturbance. This does not include construction of facilities for the transportation, distribution, use, storage, treatment, and disposal of solid waste, medical waste, and hazardous waste (REC required).

(2) Demolition of non-historic buildings, structures, or other improvements and disposal of debris therefrom, or removal of a part thereof for disposal, in accordance with applicable regulations, including those regulations applying to removal of asbestos, polychlorinated biphenyls (PCBs), lead-based paint, and other special hazard items (REC required).

(3) Road or trail construction and repair on existing rights-of-ways or on previously disturbed areas.

(d) Cultural and natural resource management activities:

(1) Land regeneration activities using only native trees and vegetation, including site preparation. This does not include forestry operations (REC required).

(2) Routine maintenance of streams and ditches or other rainwater conveyance structures (in accordance with USACE permit authority under Section 404 of the Clean Water Act and applicable state and local permits), and erosion control and stormwater control structures (REC required).

(3) Implementation of hunting and fishing policies or regulations that are consistent with state and local regulations.

(4) Studies, data collection, monitoring and information gathering that do not involve major surface disturbance. Examples include topographic surveys, bird counts, wetland mapping, and other resources inventories (REC required).

(5) Maintenance of archaeological, historical, and endangered/threatened species avoidance markers, fencing, and signs.

(e) Procurement and contract activities:

(1) Routine procurement of goods and services (complying with applicable procedures for sustainable or ''green'' procurement) to support operations and infrastructure, including routine utility services and contracts.

(2) Acquisition, installation, and operation of utility and communication systems, mobile antennas, data processing cable and similar electronic equipment that use existing right-of-way, easement, distribution systems, and/or facilities (REC required).

(3) Conversion of commercial activities under the provisions of AR 5–20. This includes only those actions that do not change the actions or the missions of the organization or alter the existing land-use patterns.

(4) Modification, product improvement, or configuration engineering design change to materiel, structure, or item that does not change the original impact of the materiel, structure, or item on the environment (REC required).

(5) Procurement, testing, use, and/or conversion of a commercially available product (for example, forklift, generator, chain saw, etc.) which does not meet the definition of a weapon system (Title 10, U.S.C., Section 2403. ''Major weapon systems: Contractor guarantees''), and does not result in any unusual disposal requirements.

(6) Acquisition or contracting for spares and spare parts, consistent with the approved Technical Data Package (TDP).

(7) Modification and adaptation of commercially available items and products for military application (for example, sportsman's products and wear such as holsters, shotguns, sidearms, protective shields, etc.), as long as modifications do not alter the normal impact to the environment (REC required).

(8) Adaptation of non-lethal munitions and restraints from law enforcement suppliers and industry (such as rubber bullets, stun grenades, smoke bombs, etc.) for military police and crowd control activities where there is no change from the original product design and there are no unusual disposal requirements. The development and use by the military of non-lethal munitions and restraints which are similar to those used by local police forces and in which there are no unusual disposal requirements (REC required).

(f) Real estate activities:

(1) Grants or acquisitions of leases, licenses, easements, and permits for use of real property or facilities in which there is no significant change in land or facility use. Examples include, but are not limited to, Army controlled property and Army leases of civilian property to include leases of training, administrative, general use, special purpose, or warehouse space (REC required).

(2) Disposal of excess easement areas to the underlying fee owner (REC required).

(3) Transfer of real property administrative control within the Army, to another military department, or to other federal agency, including the return of public domain lands to the Department of Interior, and reporting of property as excess and surplus to the GSA for disposal (REC required).

(4) Transfer of active installation utilities to a commercial or governmental utility provider, except for those systems on property that has been declared excess and proposed for disposal (REC required).

(5) Acquisition of real property (including facilities) where the land use will not change substantially or where the land acquired will not exceed 40 acres and the use will be similar to current or ongoing Army activities on adjacent land (REC required).

(6) Disposal of real property (including facilities) by the Army where the reasonably foreseeable use will not change significantly (REC required).

(g) Repair and maintenance activities:

(1) Routine repair and maintenance of buildings, airfields, grounds, equipment, and other facilities. Examples include, but are not limited to: Removal and disposal of asbestos-containing material (for example, roof material and floor tile) or lead-based paint in accordance with applicable regulations; removal of dead, diseased, or damaged trees; and repair of roofs, doors, windows, or fixtures (REC required for removal and disposal of asbestos-containing material and lead-based paint or work on historic structures).

(2) Routine repairs and maintenance of roads, trails, and firebreaks. Examples include, but are not limited to: grading and clearing the roadside of brush with or without the use of herbicides; resurfacing a road to its original conditions; pruning vegetation, removal of dead, diseased, or damaged trees and cleaning culverts; and minor soil stabilization activities.

(3) Routine repair and maintenance of equipment and vehicles (for example, autos,

tractors, lawn equipment, military vehicles, etc.) which is substantially the same as that routinely performed by private sector owners and operators of similar equipment and vehicles. This does not include depot maintenance of unique military equipment.

(h) Hazardous materials/hazardous waste management and operations:

(1) Use of gauging devices, analytical instruments, and other devices containing sealed radiological sources; use of industrial radiography; use of radioactive material in medical and veterinary practices; possession of radioactive material incident to performing services such as installation, maintenance, leak tests, and calibration; use of uranium as shielding material in containers or devices; and radioactive tracers (REC required).

(2) Immediate responses in accordance with emergency response plans (for example, Spill Prevention Control and Countermeasure Plan (SPCCP)/Installation Spill Contingency Plan (ISCP), and Chemical Accident and Incident Response Plan) for release or discharge of oil or hazardous materials/substances; or emergency actions taken by Explosive Ordnance Demolition (EOD) detachment or Technical Escort Unit.

(3) Sampling, surveying, well drilling and installation, analytical testing, site preparation, and intrusive testing to determine if hazardous wastes, contaminants, pollutants, or special hazards (for example, asbestos, PCBs, lead-based paint, or unexploded ordnance) are present (REC required).

(4) Routine management, to include transportation, distribution, use, storage, treatment, and disposal of solid waste, medical waste, radiological and special hazards (for example, asbestos, PCBs, lead-based paint, or unexploded ordnance), and/or hazardous waste that complies with EPA, Army, or other regulatory agency requirements. This CX is not applicable to new construction of facilities for such management purposes.

(5) Research, testing, and operations conducted at existing enclosed facilities consistent with previously established safety levels and in compliance with applicable federal, state, and local standards. For facilities without existing NEPA analysis, including contractor-operated facilities, if the operation will substantially increase the extent of potential environmental impacts or is controversial, an EA (and possibly an EIS) is required.

(6) Reutilization, marketing, distribution, donation, and resale of items, equipment, or materiel; normal transfer of items to the Defense Logistics Agency. Items, equipment, or materiel that have been contaminated with hazardous materials or wastes will be adequately cleaned and will conform to the applicable regulatory agency's requirements.

(i) Training and testing:

(1) Simulated war games (classroom setting) and on-post tactical and logistical exercises involving units of battalion size or smaller, and where tracked vehicles will not be used (REC required to demonstrate coordination with installation range control and environmental office).

(2) Training entirely of an administrative or classroom nature.

(3) Intermittent on-post training activities (or off-post training covered by an ARNG land use agreement) that involve no live fire or vehicles off established roads or trails. Uses include, but are not limited to, land navigation, physical training, Federal Aviation Administration (FAA) approved aerial overflights, and small unit level training.

(j) Aircraft and airfield activities:

(1) Infrequent, temporary (less than 30 days) increases in air operations up to 50 percent of the typical installation aircraft operation rate (REC required).

(2) Flying activities in compliance with Federal Aviation Administration Regulations and in accordance with normal flight patterns and elevations for that facility, where the flight patterns/elevations have been addressed in an installation master plan or other planning document that has been subject to NEPA public review.

(3) Installation, repair, or upgrade of airfield equipment (for example, runway visual range equipment, visual approach slope indicators).

(4) Army participation in established air shows sponsored or conducted by non-Army entities on other than Army property.

APPENDIX C TO PART 651—MITIGATION AND MONITORING

(a) The CEQ regulations (40 CFR parts 1500–1508) recognize the following five means of mitigating an environmental impact. These five approaches to mitigation are presented in order of desirability.

(1) Avoiding the impact altogether by not taking a certain action or parts of an action. This method avoids environmental impact by eliminating certain activities in certain areas. As an example, the Army's Integrated Training Area Management (ITAM) program accounts for training requirements and activities while considering natural and cultural resource conditions on ranges and training land. This program allows informed management decisions associated with the use of these lands, and has mitigated potential impacts by limiting activities to areas that are compatible with Army training needs. Sensitive habitats and other resources are thus protected, while the mission requirements are still met.

(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation. Limiting the degree or magnitude of the action can reduce the extent of

an impact. For example, changing the firing time or the number of rounds fired on artillery ranges will reduce the noise impact on nearby residents. Using the previous ITAM example, the conditions of ranges can be monitored, and, when the conditions on the land warrant, the intensity or magnitude of the training on that parcel can be modified through a variety of decisions.

(3) Rectifying the impact by repairing, rehabilitating, or restoring the effect on the environment. This method restores the environment to its previous condition or better. Movement of troops and vehicles across vegetated areas often destroys vegetation. Either reseeding or replanting the areas with native plants after the exercise can mitigate this impact.

(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action. This method designs the action so as to reduce adverse environmental effects. Examples include maintaining erosion control structures, using air pollution control devices, and encouraging car pools in order to reduce transportation effects such as air pollution, energy consumption, and traffic congestion.

(5) Compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20). This method replaces the resource or environment that will be impacted by the action. Replacement can occur in-kind or otherwise; for example, deer habitat in the project area can be replaced with deer habitat in another area; an in-kind replacement at a different location. This replacement can occur either on the impact site or at another location. This type of mitigation is often used in water resources projects.

(b) The identification and evaluation of mitigations involves the use of experts familiar with the predicted environmental impacts. Many potential sources of information are available for assistance. These include sources within the Army such as the USACHPPM, the USAEC, the MACOM environmental office, the ODEP, COE research laboratories, COE districts and divisions, and DoD Regional Support Centers. State agencies are another potential source of information, and the appropriate POC within these agencies may be obtained from the installation environmental office. Local interest groups may also be able to help identify potential mitigation measures. Other suggested sources of assistance include:

(1) Aesthetics:

(i) Installation Landscape Architect.

(ii) COE District Landscape Architects.

(2) Air Quality:

(i) Installation Environmental Specialist.

(ii) Installation Preventive Medicine Officer.

(3) Airspace:

(i) Installation Air Traffic and Airspace Officers.

(ii) DA Regional Representative to the FAA.

(iii) DA Aeronautical Services.

(iv) Military Airspace Management System Office.

(v) Installation Range Control Officer.

(4) Earth Science:

(i) Installation Environmental Specialist.

(ii) USACE District Geotechnical Staff.

(5) Ecology:

(i) Installation Environmental Specialist.

(ii) Installation Wildlife Officer.

(iii) Installation Forester.

(iv) Installation Natural Resource Committee.

(v) USACE District Environmental Staff.

(6) Energy/Resource Conservation: Installation Environmental Specialist.

(7) Health and Safety:

(i) Installation Preventive Medicine Officer.

(ii) Installation Safety Officer.

(iii) Installation Hospital.

(iv) Installation Mental Hygiene or Psychiatry Officer.

(v) Chaplain's Office.

(8) Historic/Archaeological Resources:

(i) Installation Environmental Specialist.

(ii) Installation Historian or Architect.

(iii) USACE District Archaeologist.

(9) Land Use Impacts: (i) Installation Master Planner.

(ii) USACE District Community Planners.

(10) Socioeconomics:

(i) Personnel Office.

(ii) Public Information Officer.

(iii) USACE District Economic Planning Staff.

(11) Water Quality:

(i) Installation Environmental Specialist.

(ii) Installation Preventive Medicine Officer.

(iii) USACE District Environmental Staff.

(12) Noise:

(i) Preventive Medicine Officer.

(ii) Directorate of Public Works.

(iii) Installation Master Planner.

(13) Training Impacts:

Installation Director of Plans, Training, and Mobilization

(c) Several different mitigation techniques have been used on military installations for a number of years. The following examples illustrate the variety of possible measures:

(1) There are maneuver restrictions in areas used extensively for tracked vehicle training. These restrictions are not designed to infringe on the military mission, but rather to reduce the amount of damage to the training area.

(2) Aerial seeding has been done on some installations to reduce erosion problems.

(3) Changing the time and/or frequency of operations has been used. This may involve changing the season of the year, the time of

day, or even day of the week for various activities. These changes avoid noise impacts as well as aesthetic, transportation, and some ecological problems.

(4) Reducing the effects of construction has involved using techniques that keep heavy equipment away from protected trees and quickly re-seeding areas after construction.

(d) Monitoring and enforcement programs are applicable (40 CFR 1505.2(c)) and the specific adopted action is an important case (40 CFR 1505.3) if:

(1) There is a change in environmental conditions or project activities that were assumed in the EIS, such that original predictions of the extent of adverse environmental impacts may be too limited.

(2) The outcome of the mitigation measure is uncertain, such as in the case of the application of new technology.

(3) Major environmental controversy remains associated with the selected alternative.

(4) Failure of a mitigation measure, or other unforeseen circumstances, could result in serious harm to federal-or state-listed endangered or threatened species; important historic or archaeological sites that are either on, or meet eligibility requirements for nomination to the National Register of Historic Places; wilderness areas, wild and scenic rivers, or other public or private protected resources. Evaluation and determination of what constitutes serious harm must be made in coordination with the appropriate federal, state, or local agency responsible for each particular program.

(e) Five basic considerations affect the establishment of monitoring programs:

(1) *Legal requirements*. Permits for some actions will require that a monitoring system be established (for example, dredge and fill permits from the USACE). These permits will generally require both enforcement and effectiveness monitoring programs.

(2) *Protected resources*. These include federal-or state-listed endangered or threatened species, important historic or archaeological sites (whether or not these are listed or eligible for listing on the National Register of Historic Places), wilderness areas, wild and scenic rivers, and other public or private protected resources. Private protected resources include areas such as Audubon Society Refuges, Nature Conservancy lands, or any other land that would be protected by law if it were under government ownership, but is privately owned. If any of these resources are affected, an effectiveness and enforcement-monitoring program must be undertaken in conjunction with the federal, state, or local agency that manages the type of resource.

(3) *Major environmental controversy*. If a controversy remains regarding the effect of an action or the effectiveness of a mitigation, an enforcement and effectiveness monitoring program must be undertaken. Controversy includes not only scientific disagreement about the mitigation's effectiveness, but also public interest or debate.

(4) *Mitigation outcome*. The probability of the mitigation's success must be carefully considered. The proponent must know if the mitigation has been successful elsewhere. The validity of the outcome should be confirmed by expert opinion. However, the proponent should note that a certain technique, such as artificial seeding with the natural vegetation, which may have worked successfully in one area, may not work in another.

(5) *Changed conditions*. The final consideration is whether any condition, such as the environmental setting, has changed (for example, a change in local land use around the area, or a change in project activities, such as increased amount of acreage being used or an increased movement of troops). Such changes will require preparation of a supplemental document (see §§651.5(g) and 651.24) and additional monitoring. If none of these conditions are met (that is, requirement by law, protected resources, no major controversy is involved, effectiveness of the mitigation is known, and the environmental or project conditions have not changed), then only an enforcement monitoring program is needed. Otherwise, both an enforcement and effectiveness monitoring program will be required.

(f) Enforcement monitoring program. The development of an enforcement monitoring program is governed by who will actually perform the mitigation; a contractor, a cooperating agency, or an in-house (Army) lead agency. The lead agency is ultimately responsible for performing any mitigation activities.

(1) *Contract performance*. Several provisions must be made in work to be performed by contract. The lead agency must ensure that contract provisions include the performance of the mitigation activity and that penalty clauses are written into the contracts. It must provide for timely inspection of the mitigation measures and is responsible for enforcing all contract provision.

(2) *Cooperating agency performance*. The lead agency must ensure that, if a cooperating agency performs the work, it understands its role in the mitigation. The lead agency must determine and agree upon how the mitigation measures will be funded. It must also ensure that any necessary formal paperwork such as cooperating agreements is complete.

(3) *Lead agency performance*. If the lead agency performs the mitigation, the proponent must ensure that needed tasks are performed, provide appropriate funding in the project budget, arrange for necessary manpower allocations, and make any necessary changes in the agency (installation) regulations (such as environmental or range regulations).

(g) Effectiveness monitoring. Effectiveness monitoring is often difficult to establish. The first step is to determine what must be monitored, based on criteria discussed during the establishment of the system; for example, the legal requirements, protected resources, area of controversy, known effectiveness, or changed conditions. Initially, this can be a very broad statement, such as reduction of impacts on a particular stream by a combination of replanting, erosion control devices, and range regulations. The next step is finding the expertise necessary to establish the monitoring system. The expertise may be available on-post or may be obtained from an outside source. After a source of expertise is located, the program can be established using the following criteria:

(1) Any technical parameters used must be measurable; for example, the monitoring program must be quantitative and statistically sound.

(2) A baseline study must be completed before the monitoring begins in order to identify the actual state of the system prior to any disturbance.

(3) The monitoring system must have a control, so that it can isolate the effects of the mitigation procedures from effects originating outside the action.

(4) The system's parameters and means of measuring them must be replicable.

(5) Parameter results must be available in a timely manner so that the decision maker can take any necessary corrective action before the effects are irreversible.

(6) Not every mitigation has to be monitored separately. The effectiveness of several mitigation actions can be determined by one measurable parameter. For example, the turbidity measurement from a stream can include the combined effectiveness of mitigation actions such as reseeding, maneuver restrictions, and erosion control devices. However, if a method combines several parameters and a critical change is noted, each mitigation measurement must be examined to determine the problem.

APPENDIX D TO PART 651—PUBLIC PARTICIPATION PLAN

The objective of the plan will be to encourage the full and open discussion of issues related to Army actions. Some NEPA actions will be very limited in scope, and may not require full public participation and involvement. Other NEPA actions will obviously be of interest, not only to the local community, but to others across the country as well.

(a) To accomplish this objective, the plan will require:

(1) Dissemination of information to local and installation communities through such means as news releases to local media, announcements to local citizens groups, and Commander's letters. Such information may be subject to Freedom of Information Act and operations security review.

(2) The invitation of public comments through two-way communication channels that will be kept open through various means.

(3) The use of fully informed public affairs officers at all levels.

(4) Preparation of EAs which incorporate public involvement processes whenever appropriate (40 CFR 1506.6).

(5) Consultation of persons and agencies such as:

(i) Municipal, township, and county elected and appointed officials.

(ii) Tribal, state, county, and local government officials and administrative personnel whose official duties include responsibility for activities or components of the affected environment related to the proposed Army action.

(iii) Local and regional administrators of other federal agencies or commissions that may either control resources potentially affected by the proposed action (for example, the U.S. Fish and Wildlife Service) or who may be aware of other actions by different federal agencies whose effects must be considered with the proposed Army action (for example, the GSA).

(iv) Members of identifiable population segments within the potentially affected environments, whether or not they have clearly identifiable leaders or an established organization such as farmers and ranchers, homeowners, small business owners, and Native Americans.

(v) Members and officials of those identifiable interest groups of local or national scope that may have an interest in the environmental effects of the proposed action or activity (for example, hunters and fishermen, Isaak Walton League, Sierra Club, and the Audubon Society).

(vi) Any person or group that has specifically requested involvement in the specific action or similar actions.

(b) Public involvement should be solicited using the following processes and procedures:

(1) Direct individual contact. Such limited contact may suffice for all required public involvement, when the expected environmental effect is of a very limited scope. This contact should identify:

(i) Persons expected to express an opinion and later participate.

(ii) Preliminary positions of such persons on the scope of issues that the analysis must address.

(2) Small workshops or discussion groups.

(3) Larger public gatherings that are held after some formulation of the potential issues, inviting the public to express views on the proposed courses of action. Public suggestions or additional alternative courses

of action may be expressed at these gatherings which need not be formal public hearings.

(4) Any other processes and procedures to accomplish the appropriate level of public involvement.

(c) Scoping Guidance. All affected parties must be included in the scoping process (AR 360–5). The plan must include the following:

(1) Information disseminated to local and installation communities through such means as news releases to local media, announcements to local citizens groups, and Commander's letters at each phase or milestone (more frequently if needed) of the project. Such information may be subject to Freedom of Information Act and operations security review.

(2) Each phase or milestone (more frequently if needed) of the project will be coordinated with representatives of local, state, and federal government agencies.

(3) Public comments will be invited and two-way communication channels will be kept open through various means as stated above.

(4) Public affairs officers at all levels will be kept informed.

(5) When an EIS is being prepared, public involvement is a requisite element of the scoping process (40 CFR 1501.7(a)(1)).

(6) Preparation of EAs will incorporate public involvement processes whenever appropriate (40 CFR 1506.6).

(7) Persons and agencies to be consulted include the following:

(i) Municipal, township, and county elected and appointed officials.

(ii) Tribal, state, county, and local government officials and administrative personnel whose official duties include responsibility for activities or components of the affected environment related to the proposed Army action.

(iii) Local and regional administrators of other federal agencies or commissions that may either control resources potentially affected by the proposed action (for example, the U.S. Fish and Wildlife Service); or who may be aware of other actions by different federal agencies whose effects must be considered with the proposed Army action, (for example, the GSA).

(iv) Members of identifiable population segments within the potentially affected environments, whether or not they have clearly identifiable leaders or an established organization such as farmers and ranchers, homeowners, small business owners, and Indian tribes.

(v) Members and officials of those identifiable interest groups of local or national scope that may have interest in the environmental effects of the proposed action or activity (for example, hunters and fishermen, Isaak Walton League, Sierra Club, and the Audubon Society).

(vi) Any person or group that has specifically requested involvement in the specific action or similar actions.

(8) The public involvement processes and procedures by which participation may be solicited include the following:

(i) The direct individual contact process identifies persons expected to express an opinion and participate in later public meetings. Direct contact may also identify the preliminary positions of such persons on the scope of issues that the EIS will address. Such limited contact may suffice for all required public involvement, when the expected environmental effect is of very limited scope.

(ii) Small workshops or discussion groups.

(iii) Larger public gatherings that are held after some formulation of the potential issues. The public is invited to express its views on the proposed courses of action. Public suggestions or alternative courses of action not already identified may be expressed at these gatherings that need not be formal public hearings.

(iv) Identifying and applying other processes and procedures to accomplish the appropriate level of public involvement.

(9) The meetings described above should not be public hearings in the early stages of evaluating a proposed action. Public hearings do not substitute for the full range of public involvement procedures under the purposes and intent of (a) of this appendix.

(10) Public surveys or polls to identify public opinion of a proposed action will be performed (AR 335–15, chapter 10).

(d) Preparing the Notice of Intent. In preparing the NOI, the proponent will:

(1) In the NOI, identify the significant issues to be analyzed in the EIS.

(2) In the NOI, identify the office or person responsible for matters related to the scoping process. If they are not the same as the proponent of the action, make that distinction.

(3) Identify the lead and cooperating agency, if already determined (40 CFR 1501.5 and 1501.6).

(4) Identify the method by which the agency will invite participation of affected parties; and identify a tentative list of the affected parties to be notified.

(5) Identify the proposed method for accomplishing the scoping procedure.

(6) Indicate the relationship between the timing of the preparation of environmental analyses and the tentative planning and decision-making schedule including:

(i) The scoping process itself.

(ii) Collecting or analyzing environmental data, including studies required of cooperating agencies.

(iii) Preparation of DEISs and FEISs.

(iv) Filing of the ROD.

(v) Taking the action.

(7) For a programmatic EIS, preparing a general expected schedule for future specific implementing actions that will involve separate environmental analysis.

(8) If applicable, in the NOI, identify the extent to which the EIS preparation process is exempt from any of the normal procedural requirements of this part, including scoping.

APPENDIX E TO PART 651—CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT

(a) EISs will:

(1) Be analytic rather than encyclopedic. Impacts will be discussed in proportion to their significance; and insignificant impacts will only be briefly discussed, sufficient to show why more analysis is not warranted.

(2) Be kept concise and no longer than absolutely necessary to comply with NEPA, CEQ regulations, and this part. Length should be determined by potential environmental issues, not project size. The EIS should be no longer than 300 pages.

(3) Describe the criteria for selecting alternatives, and discuss those alternatives, including the ''no action'' alternative, to be considered by the ultimate decision maker.

(4) Serve as a means to assess environmental impacts of proposed military actions, rather than justifying decisions.

(b) The EIS will consist of the following:

(1) *Cover sheet.* The cover sheet will not exceed one page (40 CFR 1502.11) and will be accompanied by a signature page for the proponent, designated as preparer; the installation environmental office (or other source of NEPA expertise), designated as reviewer; and the Installation Commander (or other Activity Commander), designated as approver. It will include:

(i) The following statement: ''The material contained in the attached (final or draft) EIS is for internal coordination use only and may not be released to non-Department of Defense agencies or individuals until coordination has been completed and the material has been cleared for public release by appropriate authority.'' This sheet will be removed prior to filing the document with the EPA.

(ii) A list of responsible agencies including the lead agency and any cooperating agency.

(iii) The title of the proposed action that is the subject of the statement and, if appropriate, the titles of related cooperating agency actions, together with state and county (or other jurisdiction as applicable) where the action is located.

(iv) The name, address, and telephone number of the person at the agency who can supply further information, and, as appropriate, the name and title of the major approval authority in the command channel through HQDA staff proponent.

(v) A designation of the statement as a draft, final, or draft or final supplement.

(vi) A one-paragraph abstract of the statement that describes only the need for the proposed action, alternative actions, and the significant environmental consequences of the proposed action and alternatives.

(vii) The date by which comments must be received, computed in cooperation with the EPA.

(2) *Summary.* The summary will stress the major conclusions of environmental analysis, areas of controversy, and issues yet to be resolved. The summary presentation will focus on the scope of the EIS, including issues that will not be evaluated in detail. It should list all federal permits, licenses, and other entitlements that must be obtained prior to proposal implementation. Further, a statement of compliance with the requirements of other federal environmental protection laws will be included (40 CFR 1502.25). To simplify consideration of complex relationships, every effort will be made to present the summary of alternatives and their impacts in a graphic format with the narrative. The EIS summary should be written at the standard middle school reading level. This summary should not exceed 15 pages. An additional summary document will be prepared for separate submission to the DEP and the ASA(I&E). This will identify progress ''to the date,'' in addition to the standard EIS summary which:

(i) Summarizes the content of the document (from an oversight perspective).

(ii) Outlines mitigation requirements (to improve mitigation tracking and the programming of funds).

(iii) Identifies major and unresolved issues and potential controversies. For EIS actions that have been delegated by the ASA(I&E), this document will also include status of requirements and conditions established by the delegation letter.

(3) *Table of contents.* This section will provide for the table of contents, list of figures and tables, and a list of all referenced documents, including a bibliography of references within the body of the EIS. The table of contents should have enough detail so that searching for sections of text is not difficult.

(4) *Purpose of and need for the action.* This section should clearly state the nature of the problem and discuss how the proposed action or range of alternatives would solve the problem. This section will briefly give the relevant background information on the proposed action and summarize its operational, social, economic, and environmental objectives. This section is designed specifically to call attention to the benefits of the proposed action. If a cost-benefit analysis has been prepared for the proposed action, it may be included here, or attached as an appendix and referenced here.

(5) *Alternatives considered, including proposed action and no action alternative.* This section presents all reasonable alternatives and their likely environmental impacts, written in simple, nontechnical language for the lay reader. A no action alternative must be included (40 CFR 1502.14(d)). A preferred alternative need not be identified in the DEIS; although a preferred alternative generally must be included in the FEIS (40 CFR 1502.14(e)). The environmental impacts of the alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among the options that are provided the decision maker and the public (40 CFR 1502.14). The information should be summarized in a brief, concise manner. The use of graphics and tabular or matrix format is encouraged to provide the reviewer with an at-a-glance review. In summary, the following points are required:

(i) A description of all reasonable alternatives, including the preferred action, alternatives beyond DA jurisdiction (40 CFR 1502.14(c)), and the no action alternative.

(ii) A comparative presentation of the environmental consequences of all reasonable alternative actions, including the preferred alternative.

(iii) A description of the mitigation measures and/or monitoring procedures (§ 651.15) nominated for incorporation into the proposed action and alternatives, as well as mitigation measures that are available but not incorporated and/or monitoring procedures (§ 651.15).

(iv) Listing of any alternatives that were eliminated from detailed study. A brief discussion of the reasons for which each alternative was eliminated.

(6) *Affected environment (baseline conditions) that may be impacted.* This section will contain information about existing conditions in the affected areas in sufficient detail to understand the potential effects of the alternatives under consideration (40 CFR 1502.15). Affected elements could include, for example, biophysical characteristics (ecology and water quality); land use and land use plans; architectural, historical, and cultural amenities; utilities and services; and transportation. This section will not be encyclopedic. It will be written clearly and the degree of detail for points covered will be related to the significance and magnitude of expected impacts. Elements not impacted by any of the alternatives need only be presented in summary form, or referenced.

(7) *Environmental and socioeconomic consequences.* This section forms the scientific and analytic basis for the comparison of impacts. It should discuss:

(i) Direct effects and their significance.

(ii) Indirect effects and their significance.

(iii) Possible conflicts between the proposed action and existing land use plans, policies, and controls.

(iv) Environmental effects of the alternatives, including the proposed action and the no action alternative.

(v) Energy requirements and conservation potential of various alternatives and mitigation measures.

(vi) Irreversible and irretrievable commitments of resources associated with the proposed action.

(vii) Relationship between short-term use of the environment and maintenance and enhancement of long-term productivity.

(viii) Urban quality, historic, and cultural resources, and design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.

(ix) Cumulative effects of the proposed action in light of other past, present, and foreseeable actions.

(x) Means to mitigate or monitor adverse environmental impacts.

(xi) Any probable adverse environmental effects that cannot be avoided.

(8) *List of preparers.* The EIS will list the names of its preparers, together with their qualifications (expertise, experience, and professional disciplines) (40 CFR 1502.17), including those people who were primarily responsible for preparing (research, data collection, and writing) the EIS or significant background or support papers, and basic components of the statement. When possible, the people who are responsible for a particular analysis, as well as an analysis of background papers, will be identified. If some or all of the preparers are contractors' employees, they must be identified as such. Identification of the firm that prepared the EIS is not, by itself, adequate to meet the requirements of this point. Normally, this list will not exceed two pages. Contractors will execute disclosure statements specifying that they have no financial or other interest in the outcome of the project. These statements will be referenced in this section of the EIS.

(9) *Distribution list.* For the DEIS, a list will be prepared indicating from whom review and comment is requested. The list will include public agencies and private parties or organizations. The distribution of the DEIS and FEIS will include the CBTDEVs from whom comments were requested, irrespective of whether they provided comments.

(10) *Index.* The index will be an alphabetical list of topics in the EIS, especially of the types of effects induced by the various alternative actions. Reference may be made to either page number or paragraph number.

(11) *Appendices (as appropriate).* If an agency prepares an appendix to an EIS, the appendix will consist of material prepared in

connection with an EIS (distinct from material not so prepared and incorporated by reference), consist only of material that substantiates any analysis fundamental to an impact statement, be analytic and relevant to the decision to be made, and be circulated with the EIS or readily available.

APPENDIX F TO PART 651—GLOSSARY

Section I—Abbreviations

AAE

Army Acquisition Executive.

AAPPSO

Army Acquisition Pollution Prevention Support Office.

ACAT

Acquisition Category.

ACSIM

Assistant Chief of Staff for Installation Management.

ADNL

A-weighted day-night levels.

AQCR

Air Quality Control Region.

AR

Army Regulation.

ARNG

Army National Guard.

ARSTAF

Army Staff.

ASA(AL&T)

Assistant Secretary of the Army (Acquisition, Logistics, and Technology).

ASA(FM)

Assistant Secretary of the Army for Financial Management.

ASA(I&E)

Assistant Secretary of the Army (Installations and Environment).

ASD(ISA)

Assistant Secretary of Defense (International Security Affairs).

CARD

Cost Analysis Requirements Description.

CBTDEV

Combat Developer.

CEQ

Council on Environmental Quality.

CERCLA

Comprehensive Environmental Response Compensation and Liability Act.

CDNL

C-Weighted Day-Night Levels.

CFR

Code of Federal Regulations.

CONUS

Continental United States.

CX

Categorical Exclusion.

DA

Department of the Army.

DAD

Defense Acquisition Deskbook.

DASA(ESOH)

Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health).

DCSLOG

Deputy Chief of Staff for Logistics.

DCSOPS

Deputy Chief of Staff for Operations and Plans.

DEIS

Draft Environmental Impact Statement.

DEP

Director of Environmental Programs.

DOD

Department of Defense.

DOPAA

Description of Proposed Action and Alternatives.

DSA

Deputy for System Acquisition.

DTIC

Defense Technical Information Center.

DTLOMS

Doctrine, Training, Leader Development, Organization, Materiel, and Soldier.

DUSD(IE)

Deputy Under Secretary of Defense for Installations and Environment.

EA

Environmental Assessment.

EBS

Environmental Baseline Studies.

EC

Environmental Coordinator.

ECAP

Environmental Compliance Achievement Program.

ECAS

Environmental Compliance Assessment System.

EE/CA

Engineering Evaluation/Cost Analysis.

EICS

Environmental Impact Computer System.

EIFS

Economic Impact Forecast System.

EIS

Environmental Impact Statement.

EJ

Environmental Justice.

EOD

Explosive Ordnance Demolition.

EPA

Environmental Protection Agency.

EPR

Environmental Program Requirements.

EQCC

Environmental Quality Control Committee.

ESH

Environment, Safety, and Health.

FAA

Federal Aviation Administration.

FEIS

Final Environmental Impact Statement.

FNSI

Finding of No Significant Impact.

FR

Federal Register.

FS

Feasibility Study.

FTP

Full-Time Permanent.

GC

General Counsel.

GOCO

Government-Owned, Contractor-Operated.

GSA

General Services Administration.

HQDA

Headquarters, Department of the Army.

ICRMP

Integrated Cultural Resources Management Plan.

ICT

Integrated Concept Team.

INRMP

Integrated Natural Resources Management Plan.

IPT

Integrated Process Team.

ISCP

Installation Spill Contingency Plan.

ISR

Installation Status Report.

ITAM

Integrated Training Area Management.

LCED

Life Cycle Environmental Documentation.

MACOM

Major Army Command.

MATDEV

Materiel Developer.

MDA

Milestone Decision Authority.

MFA

Materiel Fielding Agreement.

MFP

Materiel Fielding Plan.

MILCON

Military Construction.

MNS

Mission Needs Statement.

MOA

Memorandum of Agreement.

MOU

Memorandum of Understanding.

NAGPRA

Native American Graves Protection and Repatriation Act.

NEPA

National Environmental Policy Act.

NGB

National Guard Bureau.

NHPA

National Historic Preservation Act.

NOA

Notice of Availability.

NOI

Notice of Intent.

NPR

National Performance Review.

NRC

Nuclear Regulatory Commission.

NWR

Notice of Availability of Weekly Receipts (EPA).

OASD(PA)

Office of the Assistant Secretary of Defense for Public Affairs.

OCLL

Office of the Chief of Legislative Liaison.

OCPA

Office of the Chief of Public Affairs.

ODEP

Office of the Director of Environmental Programs.

OFS

Officer Foundation Standards.

OGC

Office of General Counsel.

OIPT

Overarching Integrated Process Team.

OMA

Operations and Maintenance Army.

OMANG

Operations and Maintenance Army National Guard.

OMAR

Operations and Maintenance Army Reserve.

OOTW

Operations Other Than War.

OPSEC

Operations Security.

ORD

Operating Requirements Document.

OSD

Office of the Secretary of Defense.

OSG

Office of the Surgeon General.

PAO

Public Affairs Officer.

PCB

Polychlorinated Biphenyls.

PDEIS

Preliminary Draft Environmental Impact Statement.

PEO

Program Executive Officer.

PM

Program Manager.

POC

Point of Contact.

POL

Petroleum, Oils, and Lubricants.

PPBES

Program Planning and Budget Execution System.

RCRA

Resource Conservation and Recovery Act.

RDT&E

Research, Development, Test, and Evaluation.

REC

Record of Environmental Consideration.

ROD

Record of Decision.

RONA

Record of Non-Applicability.

RSC

Regional Support Command.

S&T

Science and Technology.

SA

Secretary of the Army.

SARA

Superfund Amendments and Reauthorization Act.

SASO

Stability and Support Operations.

SOFA

Status of Forces Agreement.

SPCCP

Spill Prevention Control and Countermeasure Plan.

TDP

Technical Data Package.

TDY

Temporary Duty.

TEMP

Test and Evaluation Master Plan.

TJAG

The Judge Advocate General.

TOE

Table of Organization Equipment.

TRADOC

U.S. Army Training and Doctrine Command.

USACE

U.S. Army Corps of Engineers.

USACHPPM

U.S. Army Center for Health Promotion and Preventive Medicine.

USAEC

U.S. Army Environmental Center.

U.S.C.

United States Code.

Section II—Terms

Categorical Exclusion

A category of actions that do not require an EA or an EIS because Department of the Army (DA) has determined that the actions do not have an individual or cumulative impact on the environment.

Environmental (or National Environmental Policy Act) Analysis

This term, as used in this part, will include all documentation necessary to coordinate and staff analyses or present the results of the analyses to the public or decision maker.

Foreign Government

A government, regardless of recognition by the United States, political factions, and organizations, that exercises governmental power outside the United States.

Foreign Nations

Any geographic area (land, water, and airspace) that is under the jurisdiction of one or more foreign governments. It also refers to any area under military occupation by the United States alone or jointly with any other foreign government. Includes any area that is the responsibility of an international organization of governments; also includes contiguous zones and fisheries zones of foreign nations.

Global Commons

Geographical areas outside the jurisdiction of any nation. They include the oceans outside territorial limits and Antarctica. They do not include contiguous zones and fisheries zones of foreign nations.

Headquarters, Department of the Army proponent

As the principal planner, implementer, and decision authority for a proposed action, the HQDA proponent is responsible for the substantive review of the environmental documentation and its thorough consideration in the decision-making process.

Major Federal Action

Reinforces, but does not have a meaning independent of, ''significantly affecting the environment,'' and will be interpreted in that context. A federal proposal with ''significant effects'' requires an EIS, whether it is ''major'' or not. Conversely, a ''major federal action'' without ''significant effects'' does not necessarily require an EIS.

Preparers

Personnel from a variety of disciplines who write environmental documentation in clear and analytical prose. They are primarily responsible for the accuracy of the document.

Proponent

Proponent identification depends on the nature and scope of a proposed action as follows:

(1) Any Army structure may be a proponent. For instance, the installation/activity Facility Engineer (FE)/Director of Public Works becomes the proponent of installation-wide Military Construction Army (MCA) and Operations and Maintenance (O&M) Activity; Commanding General, TRADOC becomes the proponent of a change in initial entry training; and the Program Manager becomes the proponent for a major acquisition program. The proponent may or may not be the preparer.

(2) In general, the proponent is the unit, element, or organization that is responsible for initiating and/or carrying out the proposed action. The proponent has the responsibility to prepare and/or secure funding for preparation of the environmental documentation.

Significantly Affecting the Environment

The significance of an action's, program's, or project's effects must be evaluated in light of its context and intensity, as defined in 40 CFR 1508.27.

Section III—Special Abbreviations and Terms

This part uses the following abbreviations, brevity codes or acronyms not contained in AR 310–50. These include use for electronic publishing media and computer terminology, as follows:

WWW World Wide Web.

PARTS 652–654 [RESERVED]

PART 655—RADIATION SOURCES ON ARMY LAND

AUTHORITY: 10 U.S.C. 3013.

SOURCE: 76 FR 6693, Feb. 8, 2011, unless otherwise noted.

§ 655.10 Oversight of radiation sources brought on Army land by non-Army entities (AR 385–10).

(a) As used in this section:

Agreement State has the same meaning as provided in 10 CFR 30.4.

Byproduct material has the same meaning as provided in 10 CFR 20.1003.

Radiation has the same meaning as provided in 10 CFR 20.1003.

Radioactive material includes byproduct material, source material, and special nuclear material.

Source material has the same meaning as provided in 10 CFR 20.1003.

Special nuclear material has the same meaning as provided in 10 CFR 20.1003.

(b) Army radiation permits are required for use, storage, or possession of ionizing radiation sources by non-Army entities (including their civilian contractors) on an Army installation. Such use, storage, or possession of ionizing radiation sources must be in connection with an activity of the Department of Defense or in connection with a service to be performed on the installation for the benefit of the Department of Defense, in accordance with 10 U.S.C. 2692(b)(1). Approval by the garrison commander is required to obtain an Army radiation permit. For the purposes of this section, an ionizing radiation source is:

(1) Radioactive material used, stored, or possessed under the authority of a specific license issued by the Nuclear Regulatory Commission (NRC) or an Agreement State (10 CFR parts 30, 40, and 70 or the equivalent regulations of an Agreement State); or

(2) A machine-produced ionizing radiation source capable of producing an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.1 rem (1 mSv) in 1 hour at 30 centimeters from the ionizing radiation source or from any surface that the radiation penetrates.

(c) A permit is not required for non-Army entities (including their civilian contractors) that use Army licensed radioactive material on an Army installation in coordination with the Army NRC licensee. The non-Army entity must obtain permission from the Army NRC licensee to use the radioactive materials and be in compliance with all of the Army NRC license conditions prior to beginning work on Army land.

(d) Other Military Departments are exempt from the requirement of paragraph (b) of this section to obtain an Army radiation permit; however, the garrison Radiation Safety Officer

APPENDIX F

Archaeological and Historic Preservation Act

Archeological and Historic Preservation Act (as amended)
(16 U.S.C. 469-469c-2)

Archeological and Historic Preservation Act

AS AMENDED

This Act became law on June 27, 1960 (Public Law 86-523, 16 U.S.C. 469-469c-2) and has been amended six times. The description of the Act, as amended, tracks the language of the United States Code except that (following common usage) we refer to the "Act" (meaning the Act, as amended) rather than to the "subchapter" or the "title" of the Code. The Act was originally known as the "Reservoir Salvage Act" when the initial legislation was enacted in 1960. With broadening amendments, the Act became known as the "Moss-Bennett Act" (after an early amendment) or the "Archeological Recovery Act."

16 U.S.C. 469, Purpose

Section 1

It is the purpose of this Act [16 U.S.C. 469-469c-1] to further the policy set forth in the Act entitled, "An Act to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance, and for other purposes," approved August 21, 1935 [Historic Sites Act, as amended, 16 U.S.C. 461-467] by specifically providing for the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of (1) flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of the terrain caused by the construction of a dam by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or (2) any alteration of the terrain caused as a result of any Federal construction project or federally licensed activity or program.

16 U.S.C. 469(a), Notice of dam construction to be given Secretary of the Interior

Section 2

Before any agency of the United States shall undertake the construction of a dam, or issue a license to any private individual or corporation for the construction of a dam, it shall give written notice to the Secretary of the Interior (hereafter referred to as the Secretary) setting forth the site of the proposed dam and the approximate area to be flooded and otherwise changed if such construction is undertaken: *Provided,* That with respect to any floodwater retarding dam which provides less than five thousand acre-feet of detention capacity and with respect to any other type of dam which creates a reservoir of less than forty surface acres the provisions of this section shall apply only when the constructing agency, in its preliminary surveys, finds,

or is presented with evidence that historical or archeological materials exist or may be present in the proposed reservoir area.

16 U.S.C. 469a-1, Threat of loss or destruction of significant data by Federal construction projects

Section 3

16 U.S.C. 469a-1(a), Notification and request for preservation of data

(a) Whenever any Federal agency finds, or is notified, in writing, by an appropriate historical or archeological authority, that its activities in connection with any Federal construction project or federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archeological data, such agency shall notify the Secretary, in writing, and shall provide the Secretary with appropriate information concerning the project, program, or activity. Such agency may request the Secretary to undertake the recovery, protection, and preservation of such data (including preliminary survey, or other investigation as needed, and analysis and publication of the reports resulting from such investigation), or it may, with funds appropriated for such project, program, or activity, undertake such activities. Copies of reports of any investigations made pursuant to this section shall be submitted to the Secretary, who shall make them available to the public for inspection and review.

16 U.S.C. 469a-1(b), Survey of sites, preservation of data, compensation

(b) Whenever any Federal agency provides financial assistance by loan, grant, or otherwise to any private person, association, or public entity, the Secretary, if he determines that significant scientific, prehistorical, historical, or archeological data might be irrevocably lost or destroyed, may with funds appropriated expressly for this purpose conduct, with the consent of all persons, associations, or public entities having a legal interest in the property involved, a survey of the affected site and undertake the recovery, protection, and preservation of such data (including analysis and publication). The Secretary shall, unless otherwise mutually agreed to in writing, compensate any person, association, or public entity damaged as a result of delays in construction or as a result of the temporary loss of the use of private or any nonfederally owned lands.

16 U.S.C. 469a-2, Survey, data recovery, and compensation

16 U.S.C. 469 a-2(a), Survey conducted, preservation of data

Section 4

(a) The Secretary, upon notification, in writing, by any Federal or State agency or appropriate historical or archeological authority that scientific, prehistorical, historical, or archeological data is being or may be irrevocably lost or destroyed by any Federal or federally assisted or licensed project, activity, or program, shall, if he determines that such data is significant and is being or may be irrevocably lost or destroyed and after reasonable notice to the agency responsible for funding or licensing such project, activity, or program, conduct or cause to be conducted a survey and other investigation of the areas which are or may be affected and recover and preserve such data (including analysis and publication) which, in his opinion, are not being, but should be, recovered and preserved in the public interest.

16 U.S.C. 469a-2(b), Emergency projects

(b) No survey or recovery work shall be required pursuant to this section which, in the determination of the head of the responsible agency, would impede Federal or federally assisted or licensed projects or activities undertaken in connection with any emergency, including projects or activities undertaken in anticipation of, or as a result of, a natural disaster.

16 U.S.C. 469a-2(c), Initiation of survey

(c) The Secretary shall initiate the survey or recovery effort within sixty days after notification to him pursuant to subsection (a) of this section or within such time as may be agreed upon with the head of the agency responsible for funding or licensing the project, activity, or program in all other cases.

16 U.S.C. 469a-2(d), Compensation by Secretary as a result of delay

(d) The Secretary shall, unless otherwise mutually agreed to in writing, compensate any person, association, or public entity damaged as a result of delays in construction or as a result of the temporary loss of the use of private or nonfederally owned land.

16 U.S.C. 469a-3, Progress reports, disposition of relics, and coordination

Section 5

16 U.S.C. 469a-3(a), Progress reports

(a) The Secretary shall keep the agency responsible for funding or licensing the project notified at all times of the progress of any survey made under sections 1 to 7 of this Act [16 U.S.C. 469-469c] or of any work undertaken as a result of such survey, in order that there will be as little disruption or delay as possible in the carrying out of the functions of such agency and the survey and recovery programs shall terminate at a time mutually agreed upon by the Secretary and the head of such agency unless extended by mutual agreement.

16 U.S.C. 469a-3(b), Repositories for relics and specimens

(b) The Secretary shall consult with any interested Federal and State agencies, educational and scientific organizations, and private institutions and qualified individuals, with a view to determining the ownership of and the most appropriate repository for any relics and specimens recovered as a result of any work performed as provided for in this section.

16 U.S.C. 469a-3(c), Coordination of activities

(c) The Secretary shall coordinate all Federal survey and recovery activities authorized under sections 1 to 7 of this Act [16 U.S.C. 469-469c-1].

16 U.S.C. 469b, Administration issues

Section 6

In the administration of sections 1 to 8 of this Act [16 U.S.C. 469-469c-1], the Secretary may—

(1) enter into contracts or make cooperative agreements with any Federal or State agency, any educational or scientific organization, or any institution, corporation, association, or qualified individual; and

(2) obtain the services of experts and consultants or organizations thereof in accordance with section 3109 of title 5 [of the United States Code]; and

(3) accept and utilize funds made available for salvage archeological purposes by any private person or corporation or transferred to him by any Federal agency.

16 U.S.C. 469c, Use of project funds and authorization of appropriation

16 U.S.C. 469c(a), Assistance of Federal agencies, 1% limit

Section 7

(a) To carry out the purposes of sections 1 to 8 of this Act [16 U.S.C. 469-469c-1], any Federal agency responsible for a construction project may assist the Secretary and/or it may transfer to him such funds as may be agreed upon, but not more than 1 per centum of the total amount authorized to be appropriated for such project, except that the 1 per centum limitation of this section shall not apply in the event that the project involves $50,000 or less: *Provided*, That the costs of such survey, recovery, analysis, and publication shall be considered nonreimbursable project costs.

(16 U.S.C. 469c(b), Appropriation authorization for data preservation, omitted)

(16 U.S.C. 469c(c), Appropriation authorization for surveys and investigations text, omitted)

16 U.S.C. 469c(d), Appropriation availability

(d) Beginning fiscal year 1979, sums appropriated for purposes of this section shall remain available until expended.

16 U.S.C. 469c-1, "State" defined

Section 8

As used in sections 1 to 8 of this Act [16 U.S.C. 469-469c-1], the term **"State"** includes the several States of the Union, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, and the Commonwealth of the Northern Mariana Islands.

Addendum

Addendum to the Archeological and Historic Preservation Act of 1974, as amended, from section 208 of the National Historic Preservation Act Amendments of 1980 [Public Law 96-515], as amended.

16 U.S.C. 469c-2, Costs for identification, surveys, evaluation, and data recovery

Section 208

Notwithstanding section 7(a) of this Act [16 U.S.C. 469c], or any other provision of law to the contrary—

Planning, not mitigation costs

(1) identification, surveys, and evaluation carried out with respect to historic properties within project areas may be treated for purposes of any law or rule of law as planning costs of the project and not as costs of mitigation;

Costs chargeable to licensees and permittees

(2) reasonable costs for identification, surveys, evaluation, and data recovery carried out with respect to historic properties within project areas may be charged to Federal licensees and permittees as a condition to the issuance of such license or permit; and

Waiver of 1% limit

(3) Federal agencies, with the concurrence of the Secretary and after notification of the Committee on Natural Resources of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, are authorized to waive, in appropriate cases, the 1 per centum limitation contained in section 7 of this Act [16 U.S.C. 469c(a)].

Archeological and Historic Preservation Act
(National Park Service)

Archeological and Historic Preservation Act (AHPA)

Reproduced from *Archaeological Method and Theory: An Encyclopedia*, edited by Linda Ellis, Garland Publishing Co., New York and London, 2000.

Francis P. McManamon

This statute also is known as the Archeological Recovery Act and the Moss-Bennett bill, the latter referring to the primary sponsors of the bills in the Senate and House that lead to the act. Its legislative and legal titles are: Public Law 93-291 and 16 U.S.C.469-469c. Passed and signed into law in 1974, this act amended and expanded the Reservoir Salvage Act of 1960. The AHPA required that Federal agencies provide for "...the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of...any alteration of the terrain caused as a result of any Federal construction project of federally licensed activity or program (Section 1)." This greatly expanded the number and range of Federal agencies that had to take archeological resources into account when executing, funding, or licensing projects. The Reservoir Salvage Act had required such attention only of Federal agencies, mainly the Corps of Engineers and the Bureau of Reclamation, that constructed reservoirs and related structures.

The AHPA built upon the national policy, set out in the Historic Sites Act of 1935, "...to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance...". The AHPA expanded the policy by focusing attention on significant resources and data, but does not require that they be shown to be of "national" significance. The connection between the 1935 statute and the AHPA is mentioned explicitly in the first section of the statute.

The statute is in the tradition of "salvage archaeology" as developed extensively in the River Basin Salvage Program from the late 1940s onwards. The impetus for AHPA was the destruction of archaeological sites throughout the country, frequently by actions funded or otherwise supported by Federal agencies, but not covered by the Reservoir Salvage Act, which required archeological salvage as part of dam projects (Davis 1972). The chief archaeological instigators of the statute were Carl Chapman of the University of Missouri and Charles R. McGimsey of the Arkansas Archeological Survey. The aim of the proponents of the act was to require all agencies of the Federal government to undertake archeology as part of their actions that would result in the destruction of archeological sites.

The drafters of the act, however, did not explicitly relate this legislation with the then-developing approach to archeological preservation as part of the wider historic preservation movement. This latter approach, based upon the implementation of the National Historic Preservation Act of 1966 (NHPA), eventually came to emphasize the use of planning, the importance of the National Register of Historic Places for site protection, project review under Section 106 of the NHPA, and the preservation of sites in situ when possible and feasible. It took several years of intense discussion and experimentation to develop regulations and procedures that completely integrated AHPA into the statutory framework yielding the present effective overall archeology and historic preservation program. The most important contribution of AHPA is that it made it clear that all Federal agencies were authorized to fund archeological investigations, reports, and other kinds of activities to mitigate the impacts of their projects on important archeological sites. A second important accomplishment was the pressure brought upon Federal agency managers during the process of lobbying for passage

of the bill to meet their archeological responsibilities. Finally, the extensive lobbying efforts by individual archeologists and archeological organizations between 1969 when the bill was first drafted and its passage in 1974 alerted much of the archeological professional and avocational community in the United States to the impact that government actions were having on archeological resources and the importance of keeping alert to public statutes and regulations, government programs, and new legislation (McGimsey 1985).

The statute assigns the Secretary of the Interior with substantial authority to act for the preservation of historical and archeological data and remains. Section 3 allows for the Secretary to assist other Federal agencies and even private organizations or individuals in meeting the historical and archeological preservation requirements under this statute if the project is expected to result in the loss or destruction of significant scientific, historical, or archeological data. Section 4 authorizes the Secretary, upon notification that significant historical or archeological data may be irrevocably lost or destroyed to undertake necessary studies independent of, although with some consultation with, the Federal agency responsible for undertaking, funding, or licensing the project. This aspect of the statute is carried out for the Secretary by the Departmental Consulting Archeologist in two ways. First, through "unanticipated discovery procedures" that can be initiated by agency staff or others when archeological resources are discovered unexpectedly during a Federal undertaking following the completion of Section 106 (of the NHPA) procedures. The procedures are designed to reach a means of avoiding unnecessary damage to significant archeological resources by modification of project design or timely and effective data recovery of threatened remains. Typically, a consensus is sought among the agency archeologist or consultant, agency or project proponents, the State Historic Preservation Officer, Advisory Council for Historic Preservation staff, and the Department of the Interior staff. Agencies that do not wish to use this set of procedures, have the alternative of following those set up as part of the Advisory Council's procedures (36 CFR 800.11).

Section 5 assigns the Secretary several roles in coordinating historical or archeological activities authorized by this statute, including consultation about the ownership and appropriate repositories for artifacts and other remains recovered by investigations conducted under the statute. This is one of the statutory authorities for the government wide regulations for the curation and care of Federal archeological collections and associated records (36 CFR 79). Section 5 also calls for the Secretary to compile a report for Congress on archeological survey and recovery activities authorized under this statute. This particular requirement is one of the bases for the Secretary of the Interior's Report to Congress on Federal Archeological Activities and Programs (e.g., Keel, et al. 1989; McManamon, et al. 1993). The Departmental Consulting Archeologist, National Park Service carries out this reporting requirement for the Secretary.

Section 7 of the statute authorizes Federal agencies responsible for projects to transfer to the Secretary of the Interior funds to assist them in meeting their responsibilities, up to 1% of the total amount authorized for the project. Differing interpretations of this section have lead to a general understanding that it also limited agencies to expenditures for archeological data recovery of 1% of projects' authorized total funding amount. In 1980, Section 208 of Public Law 96-515) provided a means by which agencies could obtain a waiver of the 1% limit with the concurrence of the Secretary of the Interior and the notification of Congress. The Departmental Consulting Archeologist, National Park Service is delegated to carry out the review and concurrence with any 1% waiver requests for the Secretary. Section 7 also authorized specific funding amounts for the use of the Secretary of the Interior to carry out investigations allowed under Sections 3 and 4 of the statute, however, these amounts were not often appropriated and the last year for which they were

authorized was Fiscal Year 1983.

Further Readings and Links

Archeological and Historic Preservation Act of 1974 (http://www.cr.nps.gov/local-law/FHPL_ArchHistPres.pdf) (16 U.S. Code 469-469c-2), statute text.

Curation of Federally Owned and Administered Archeological Collections (../36CFR79.HTM) (36 CFR 79), regulation text.

Managing Archeological Collections: AHPA (../../collections/laws_02 htm)

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APPENDIX G

American Indian Religious Freedom Act

American Indian Religious Freedom Act (as amended)
(42 U.S.C. 1996 and 1996a)

American Indian Religious Freedom Act

PORTION, AS AMENDED

This Act became law on August 11, 1978 (Public Law 95-341, 42 U.S.C. 1996 and 1996a) and has been amended once. The description of the Act, as amended, tracks the language of the United States Code except that (following common usage) we refer to the "Act" (meaning the Act, as amended) rather than to the "subchapter" or the "title" of the Code.

42 U.S.C. 1996, Protection and preservation of traditional religions of Native Americans

Section 1

On and after August 11, 1978, it shall be the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

42 U.S.C. 1996 note, Federal implementation of protective and preservation functions relating to Native American religious cultural rights and practices; Presidential report to Congress

Section 2

The President shall direct the various Federal departments, agencies, and other instrumentalities responsible for administering relevant laws to evaluate their policies and procedures in consultation with native traditional religious leaders in order to determine appropriate changes necessary to protect and preserve Native American religious cultural rights and practices. Twelve months after August 11, 1978, the President shall report back to Congress the results of his evaluation, including any changes* which were made in administrative policies and procedures, and any recommendations he may have for legislative action.

*One of the changes in administrative policy and procedure was Executive Order 13007, Indian Sacred Sites.

Indian Sacred Sites
(Executive Order 13007)

Presidential Documents

Executive Order 13007 of May 24, 1996

Indian Sacred Sites

By the authority vested in me as President by the Constitution and the laws of the United States, in furtherance of Federal treaties, and in order to protect and preserve Indian religious practices, it is hereby ordered:

Section 1. *Accommodation of Sacred Sites.* (a) In managing Federal lands, each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

(b) For purposes of this order:

(i) ''Federal lands'' means any land or interests in land owned by the United States, including leasehold interests held by the United States, except Indian trust lands;

(ii) ''Indian tribe'' means an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to Public Law No. 103–454, 108 Stat. 4791, and ''Indian'' refers to a member of such an Indian tribe; and

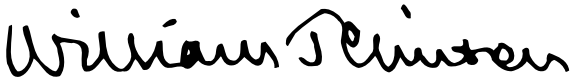
(iii) ''Sacred site'' means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.

Sec. 2. *Procedures.* (a) Each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall, as appropriate, promptly implement procedures for the purposes of carrying out the provisions of section 1 of this order, including, where practicable and appropriate, procedures to ensure reasonable notice is provided of proposed actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites. In all actions pursuant to this section, agencies shall comply with the Executive memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments.''

(b) Within 1 year of the effective date of this order, the head of each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall report to the President, through the Assistant to the President for Domestic Policy, on the implementation of this order. Such reports shall address, among other things, (i) any changes necessary to accommodate access to and ceremonial use of Indian sacred sites; (ii) any changes necessary to avoid adversely affecting the physical integrity of Indian sacred sites; and (iii) procedures implemented or proposed to facilitate consultation with appropriate Indian tribes and religious leaders and the expeditious resolution of disputes relating to agency action on Federal lands that may adversely affect access to, ceremonial use of, or the physical integrity of sacred sites.

Sec. 3. Nothing in this order shall be construed to require a taking of vested property interests. Nor shall this order be construed to impair enforceable rights to use of Federal lands that have been granted to third parties through final agency action. For purposes of this order, ''agency action'' has the same meaning as in the Administrative Procedure Act (5 U.S.C. 551(13)).

Sec. 4. This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it, create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by any party against the United States, its agencies, officers, or any person.



THE WHITE HOUSE,
May 24, 1996.

[FR Doc. 96–13597
Filed 5–27–96; 8:45 am]
Billing code 3195–01–P

APPENDIX H

Archaeological Resources Protection Act

Archaeological Resources Protection Act of 1979 (as amended)
(16 U.S.C. 470aa-mm)

Archaeological Resources Protection Act of 1979

AS AMENDED

This Act became law on October 31, 1979 (Public Law 96-95; 16 U.S.C. 470aa-mm), and has been amended four times. This description of the Act, as amended, tracks the language of the United States Code except that (following common usage) we refer to the "Act" (meaning the Act, as amended) rather than to the "subchapter" or the "title" of the Code.

16 U.S.C. 470aa, Findings and purpose

Section 2

(a) The Congress finds that—

(1) archaeological resources on public lands and Indian lands are an accessible and irreplaceable part of the Nation's heritage;

(2) these resources are increasingly endangered because of their commercial attractiveness;

(3) existing Federal laws do not provide adequate protection to prevent the loss and destruction of these archaeological resources and sites resulting from uncontrolled excavations and pillage; and

(4) there is a wealth of archaeological information which has been legally obtained by private individuals for noncommercial purposes and which could voluntarily be made available to professional archaeologists and institutions.

(b) The purpose of this Act is to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data which were obtained before October 31, 1979 [the date of the enactment of this Act].

16 U.S.C. 470bb, Definitions

Section 3

As used in this Act—

(1) the term **"archaeological resource"** means any material remains of past human life or activities which are of archaeological interest, as determined under uniform regulations promulgated pursuant to this Act. Such regulations containing such determination shall include, but not

be limited to: pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the foregoing items. Nonfossilized and fossilized paleontological specimens, or any portion or piece thereof, shall not be considered archaeological resources, under the regulations under this paragraph, unless found in an archaeological context. No item shall be treated as an archaeological resource under regulations under this paragraph unless such item is at least 100 years of age.

(2) The term "**Federal land manager**" means, with respect to any public lands, the Secretary of the department, or the head of any other agency or instrumentality of the United States, having primary management authority over such lands. In the case of any public lands or Indian lands with respect to which no department, agency, or instrumentality has primary management authority, such term means the Secretary of the Interior. If the Secretary of the Interior consents, the responsibilities (in whole or in part) under this Act of the Secretary of any department (other than the Department of the Interior) or the head of any other agency or instrumentality may be delegated to the Secretary of the Interior with respect to any land managed by such other Secretary or agency head, and in any such case, the term "Federal land manager" means the Secretary of the Interior.

(3) The term "**public lands**" means—

(A) lands which are owned and administered by the United States as part of—

(i) the national park system,

(ii) the national wildlife refuge system, or

(iii) the national forest system; and

(B) all other lands the fee title to which is held by the United States, other than lands on the Outer Continental Shelf and lands which are under the jurisdiction of the Smithsonian Institution.

(4) The term "**Indian lands**" means lands of Indian tribes, or Indian individuals, which are either held in trust by the United States or subject to a restriction against alienation imposed by the United States, except for any subsurface interests in lands not owned or controlled by an Indian tribe or an Indian individual.

(5) The term "**Indian tribe**" means any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in, or established pursuant to, the Alaska Native Claims Settlement Act (85 Stat. 688, 43 U.S.C. 1601 et seq.).

(6) The term "**person**" means an individual, corporation, partnership, trust, institution, association, or any other private entity or any officer, employee, agent, department, or instrumentality of the United States, of any Indian tribe, or of any State or political subdivision thereof.

(7) The term "**State**" means any of the fifty States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

16 U.S.C. 470cc, Excavation and removal

Section 4

16 U.S.C. 470cc(a), Application for permit

(a) Any person may apply to the Federal land manager for a permit to excavate or remove any archaeological resource located on public lands or Indian lands and to carry out activities associated with such excavation or removal. The application shall be required, under uniform regulations under this Act, to contain such information as the Federal land manager deems necessary, including information concerning the time, scope, and location and specific purpose of the proposed work.

16 U.S.C. 470cc(b), Determinations by Federal land manager prerequisite to issuance of permit

(b) A permit may be issued pursuant to an application under subsection (a) of this section if the Federal land manager determines, pursuant to uniform regulations under this Act, that—

(1) the applicant is qualified, to carry out the permitted activity,

(2) the activity is undertaken for the purpose of furthering archaeological knowledge in the public interest,

(3) the archaeological resources which are excavated or removed from public lands will remain the property of the United States, and such resources and copies of associated archaeological records and data will be preserved by a suitable university, museum, or other scientific or educational institution, and

(4) the activity pursuant to such permit is not inconsistent with any management plan applicable to the public lands concerned.

16 U.S.C. 470cc(c), Notification to Indian tribes of possible harm to or destruction of sites having religious or cultural importance

(c) If a permit issued under this section may result in harm to, or destruction of, any religious or cultural site, as determined by the Federal land manager, before issuing such permit, the Federal land manager shall notify any Indian tribe which may consider the site as having religious or cultural importance. Such notice shall not be deemed a disclosure to the public for purposes of section 9 of this Act.

16 U.S.C. 470cc(d), Terms and conditions of permit

(d) Any permit under this section shall contain such terms and conditions, pursuant to uniform regulations promulgated under this Act, as the Federal land manager concerned deems necessary to carry out the purposes of this Act.

16 U.S.C. 470cc(e), Identification of individuals responsible for complying with permit terms and conditions and other applicable laws

(e) Each permit under this section shall identify the individual who shall be responsible for carrying out the terms and conditions of the permit and for otherwise complying with this Act and other law applicable to the permitted activity.

16 U.S.C. 470cc(f), Suspension or revocation of permits, grounds

(f) Any permit issued under this section may be suspended by the Federal land manager upon his determination that the permittee has violated any provision of subsection (a), (b), or (c) of section 6 of this Act. Any such permit may be revoked by such Federal land manager upon assessment of a civil penalty under section 7 of this Act against the permittee or upon the permittee's conviction under section 6 of this Act.

16 U.S.C. 470cc(g), Excavation or removal by Indian tribes or tribe members, excavation or removal of resources located on Indian lands

(g)(1) No permit shall be required under this section or under the Act of June 8, 1906 (16 U.S.C. 431), for the excavation or removal by any Indian tribe or member thereof of any archaeological resource located on Indian lands of such Indian tribe, except that in the absence of tribal law regulating the excavation or removal of archaeological resources on Indian lands, an individual tribal member shall be required to obtain permit under this section.

(2) In the case of any permits for the excavation or removal of any archaeological resource located on Indian lands, the permit may be granted only after obtaining the consent of the Indian or Indian tribe owning or having jurisdiction over such lands. The permit shall include such terms and conditions as may be requested by such Indian or Indian tribe.

16 U.S.C. 470cc(h), Permits issued under Antiquities Act of 1906

(h)(1) No permit or other permission shall be required under the Act of June 8, 1906 (16 U.S.C. 431-433), for any activity for which a permit is issued under this section.

(2) Any permit issued under the Act of June 8, 1906 [16 U.S.C. 431-433], shall remain in effect according to its terms and conditions following the enactment of this Act. No permit under this Act shall be required to carry out any activity under a permit issued under the Act of June 8, 1906, before October 31, 1979 [the date of the enactment of this Act] which remains in effect as provided in this paragraph, and nothing in this Act shall modify or affect any such permit.

16 U.S.C. 470cc(i), Compliance with provisions relating to undertakings on properties listed in National Register not required

(i) Issuance of a permit in accordance with this section and applicable regulations shall not require compliance with section 106 of the National Historic Preservation Act, as amended [16 U.S.C. 470f].

16 U.S.C. 470cc(j), Issuance of permits to State governors for archaeological activities on behalf of States or their educational institutions

(j) Upon the written request of the Governor of any State, the Federal land manager shall issue a permit, subject to the provisions of subsections (b)(3), (b)(4), (c), (e), (f), (g), (h), and (i) of this section for the purpose of conducting archaeological research, excavation, removal, and curation, on behalf of the State or its educational institutions, to such Governor or to such designee as the Governor deems qualified to carry out the intent of this Act.

16 U.S.C. 470dd, Custody of archaeological resources

Section 5

The Secretary of the Interior may promulgate regulations providing for—

(1) the exchange, where appropriate, between suitable universities, museums, or other scientific or educational institutions, of archaeological resources removed from public lands and Indian lands pursuant to this Act, and

(2) the ultimate disposition of such resources and other resources removed pursuant to the Act of June 27, 1960 [the Reservoir Salvage Act, as amended, also known as the Archeological and Historic Preservation Act of 1974 [16 U.S.C. 469-469c-1] or the Act of June 8, 1906 [the Antiquity Act of 1906, as amended, 16 U.S.C. 431-433].

Any exchange or ultimate disposition under such regulation of archaeological resources excavated or removed from Indian lands shall be subject to the consent of the Indian or Indian tribe which owns or has jurisdiction over such lands. Following promulgation of regulations under this section, notwithstanding any other provision of law, such regulations shall govern the disposition of archaeological resources removed from public lands and Indian lands pursuant to this Act.

16 U.S.C. 470ee, Prohibited acts and criminal penalties

Section 6

16 U.S.C. 470 ee(a), Unauthorized excavation, removal, damage, alternation, or defacement of archaeological resources

(a) No person may excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless such activity is pursuant to a permit issued under section 4 of this Act, a permit referred to in section 4(h)(2) of this Act, or the exemption contained in section 4(g)(1) of this Act.

16 U.S.C. 470ee(b), Trafficking in archaeological resources: Federal law

(b) No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands or Indian lands in violation of—

(1) the prohibition contained in subsection (a) of this section, or

(2) any provision, rule, regulation, ordinance, or permit in effect under any other provision of Federal law.

16 U.S.C. 470ee(c), Trafficking in illegal interstate or foreign commerce in archaeological resources: State or local law

(c) No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange, in interstate of foreign commerce, any archaeological resource excavated, removed, sold, purchased, exchanged, transported, or received in violation of any provision, rule, regulation, ordinance, or permit in effect under State or local law.

16 U.S.C. 470ee(d), Penalities

(d) Any person who knowingly violates, or counsels, procures, solicits, or employs any other person to violate, any prohibition contained in subsection (a), (b), or (c) of this section shall, upon conviction, be fined not more than $10,000 or imprisoned not more than one year, or both: *Provided, however,* That if the commercial or archaeological value of the archaeological resources involved and the cost of restoration and repair of such resources exceeds the sum of $500, such person shall be fined not more than $20,000 or imprisoned not more than two years, or both. In the case of a second or subsequent such violation upon conviction such person shall be fined not more than $100,000, or imprisoned not more than five years, or both.

16 U.S.C. 470ee(e), Effective date

(e) The prohibitions contained in this section shall take effect on October 31, 1979 [the date of the enactment of this Act].

16 U.S.C. 470ee(f), Prospective application

(f) Nothing in subsection (b)(1) of this section shall be deemed applicable to any person with respect to any archaeological resource which was in the lawful possession of such person prior to October 31, 1979.

16 U.S.C. 470ee(g), Removal of arrowheads located on ground surface

(g) Nothing in subsection (d) of this section shall be deemed applicable to any person with respect to the removal of arrowheads located on the surface of the ground.

16 U.S.C. 470ff, Civil penalties

Section 7

16 U.S.C. 470ff(a), Assessment by Federal land managers

(a)(1) Any person who violates any prohibition contained in an applicable regulation or permit issued under this Act may be assessed a civil penalty by the Federal land manager concerned. No penalty may be assessed under this subsection unless such person is given notice and opportunity for a hearing with respect to such violation. Each violation shall be a separate offense. Any such civil penalty may be remitted or mitigated by the Federal land manager concerned.

(2) The amount of such penalty shall be determined under regulations promulgated pursuant to this Act, taking into account, in addition to other factors—

(A) the archaeological or commercial value of the archaeological resource involved, and

(B) the cost of restoration and repair of the resource and the archaeological site involved.

Such regulations shall provide that, in the case of a second or subsequent violation by any person, the amount of such civil penalty may be double the amount which would have been assessed if such violation were the first violation by such person. The amount of any penalty assessed under this subsection for any violation shall not exceed any amount equal to double the cost of restoration and repair of resources and archaeological sites damaged and double the fair market value of resources destroyed or not recovered.

(3) No penalty shall be assessed under this section for the removal of arrowheads located on the surface of the ground.

16 U.S.C. 470ff(b), Judicial review of assessed penalties, collection of unpaid assessments

(b)(1) Any person aggrieved by an order assessing a civil penalty under subsection (a) of this section may file a petition for judicial review of such order with the United States District Court for the District of Columbia or for any other district in which such person resides or transacts business. Such a petition may only be filed within the 30-day period beginning on the date the order making such assessment was issued. The court shall hear such action on the record made before the Federal land manager and shall sustain his action if it is supported by substantial evidence on the record considered as a whole.

(2) If any person fails to pay an assessment of a civil penalty—

(A) after the order making the assessment has become a final order and such person has not filed a petition for judicial review of the order in accordance with paragraph (1), or

(B) after a court in an action brought under paragraph (1) has entered a final judgment upholding the assessment of a civil penalty, the Federal land managers may request the Attorney General to institute a civil action in a district court of the United States for any district in which such person is found, resides, or transacts business to collect the penalty and such court shall have jurisdiction to hear and decide

any such action. In such action, the validity and amount of such penalty shall not be subject to review.

16 U.S.C. 470ff(c), Hearings

(c) Hearings held during proceedings for the assessment of civil penalties authorized by subsection (a) of this section shall be conducted in accordance with section 554 of title 5 [of the United States Code].

Subpoenas

The Federal land manager may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and administer oaths.

Witness fees

Witnesses summoned shall be paid the same fees and mileage that are paid to witnesses in the courts of the United States. In case of contumacy or refusal to obey a subpoena served upon any person pursuant to this paragraph, the district court of the United States for any district in which such person is found or resides or transacts business, upon application by the United States and after notice to such person, shall have jurisdiction to issue an order requiring such person to appear and give testimony before the Federal land manager or to appear and produce documents before the Federal land manager, or both, and any failure to obey such order of the court may be punished by such court as a contempt thereof.

16 U.S.C. 470gg, Enforcement

Section 8

16 U.S.C. 470gg(a), Rewards

(a) Upon the certification of the Federal land manager concerned, the Secretary of the Treasury is directed to pay from penalties and fines collected under section 6 and 7 of this Act an amount equal to one-half of such penalty or fine, but not to exceed $500, to any person who furnishes information which leads to the findings of a civil violation, or the conviction of criminal violation, with respect to which such penalty or fine was paid. If several persons provided such information, such amount shall be divided among such persons. No officer or employee of the United States or of any State or local government who furnishes information or renders service in the performance of his official duties shall be eligible for payment under this subsection.

16 U.S.C. 470gg(b), Forfeitures

(b) All archaeological resources with respect to which a violation of subsection (a), (b), or (c) of section 6 of this Act occurred and which are in the possession of any person, and all vehicles and equipment of any person which were used in connection with such violation, may be (in the discretion of the court or administrative law judge, as the case may be) subject to forfeiture to the United States upon—

(1) such person's conviction of such violation under section 6 of this Act,

(2) assessment of a civil penalty against such person under section 7 of this Act with respect to such violation, or

(3) a determination by any court that such archaeological resources, vehicles, or equipment were involved in such violation.

16 U.S.C. 470gg(c), Disposition of penalties collected and items forfeited in cases involving archaeological resources excavated or removed from Indian lands

(c) In cases in which a violation of the prohibition contained in subsection (a), (b), or (c) of section 6 of this Act involve archaeological resources excavated or removed from Indian lands, the Federal land manager or the court, as the case may be, shall provide for the payment to the Indian or Indian tribe involved of all penalties collected pursuant to section 7 of this Act and for the transfer to such Indian or Indian tribe of all items forfeited under this section.

16 U.S.C. 470hh, Confidentiality of information concerning nature and location of archaeological resources

Section 9

16 U.S.C. 470hh(a), Disclosure of information

(a) Information concerning the nature and location of any archaeological resource for which the excavation or removal requires a permit or other permission under this Act or under any other provision of Federal law may not be made available to the public under subchapter II of chapter 5 of title 5 [of the United States Code] or under any other provision of law unless the Federal land manager concerned determines that such disclosure would—

(1) further the purposes of this Act or the Act of June 27, 1960 [the Reservoir Salvage Act, as amended, 16 U.S.C. 469-469c-1] and

(2) not create a risk of harm to such resources or to the site at which such resources are located.

16 U.S.C. 470hh(b), Request for disclosure by Governors

(b) Notwithstanding the provisions of subsection (a) of this section, upon the written request of the Governor of any State, which request shall state—

(1) the specific site or area for which information is sought,

(2) the purpose for which such information is sought,

(3) a commitment by the Governor to adequately protect the confidentiality of such information to protect the resource from commercial exploitation,

the Federal land manager concerned shall provide to the Governor information concerning the nature and location of archaeological resources within the State of the requesting Governor.

16 U.S.C. 470ii, Rules and regulations, intergovernmental coordination

Section 10

16 U.S.C. 470ii(a), Promulgation, effective date

(a) The Secretaries of the Interior, Agriculture and Defense and the Chairman of the Board of the Tennessee Valley Authority, after consultation with other Federal land managers, Indian tribes, representatives of concerned State agencies, and after public notice and hearing, shall promulgate such uniform rules and regulations as may be appropriate to carry out the purposes of this Act. Such rules and regulations may be promulgated only after consideration of the provisions of the American Indian Religious Freedom Act (92 Stat.469; 42 U.S.C. 1996 and 1996a).

Submittal to congressional committees

Each uniform rule or regulation promulgated under this Act shall be submitted on the same calendar day to the Committee on Energy and Natural Resources of the United States Senate and to the Committee on Natural Resources of the United States House of Representatives, and no such uniform rule or regulation may take effect before the expiration of a period of ninety calendar days following the date of its submission to such Committees.

16 U.S.C. 470ii(b), Federal lands managers' rules

(b) Each Federal land manager shall promulgate such rules and regulations, consistent with the uniform rules and regulations under subsection (a) of this section, as may be appropriate for the carrying out of his functions and authorities under this Act.

16 U.S.C. 470ii(c), Federal land managers' public awareness program of archaeological resources

(c) Each Federal land manager shall establish a program to increase public awareness of the significance of the archaeological resources located on public lands and Indian lands and the need to protect such resources.

Section 11

16 U.S.C. 470jj, Cooperation with private individuals

The Secretary of the Interior shall take such action as may be necessary, consistent with the purposes of this Act, to foster and improve the communication, cooperation, and exchange of information between—

(1) private individuals having collections of archaeological resources and data which were obtained before October 31, 1979 [the date of the enactment of this Act], and

(2) Federal authorities responsible for the protection of archaeological resources on the public lands and Indian lands and professional archaeologists and associations of professional archaeologists.

In carrying out this section, the Secretary shall, to the extent practicable and consistent with the provisions of this Act, make efforts to expand the archaeological data base for the archaeological resources of the United States through increased cooperation between private individuals referred to in paragraph (1) and professional archaeologists and archaeological organizations.

Section 12

16 U.S.C. 470kk, Savings provisions

16 U.S.C. 470kk(a), Mining, mineral leasing, reclamation, and other multiple uses

(a) Nothing in this Act shall be construed to repeal, modify, or impose additional restrictions on the activities permitted under existing laws and authorities relating to mining, mineral leasing, reclamation, and other multiple uses of the public lands.

16 U.S.C. 470kk(b), Private collections

(b) Nothing in this Act applies to, or requires a permit for, the collection for private purposes of any rock, coin, bullet, or mineral which is not an archaeological resource, as determined under uniform regulations promulgated under section 3(1) of this Act.

16 U.S.C. 470kk(c), Lands within Act

(c) Nothing in this Act shall be construed to affect any land other than public land or Indian land or to affect the lawful recovery, collection, or sale of archaeological resources from land other than public land or Indian land.

16 U.S.C. 470ll, Annual report to Congress

Section 13

As part of the annual report required to be submitted by the specified committees of the Congress pursuant to section 5(c) of the Act of June 17, 1960 [the Reservoir Salvage Act, as amended, 74 Stat. 220; 16 U.S.C. 469a-3(c)], the Secretary of the Interior shall comprehensively report as a separate component on the activities carried out under the provisions of this Act, and he shall make such recommendations as he deems appropriate as to changes or improvements needed in the provisions of this Act. Such report shall include a brief summary of the actions undertaken by the Secretary under section 11 of this Act, relating to cooperation with private individuals.

16 U.S.C. 470mm, Surveying of lands, reporting of violations

Section 14

The Secretaries of the Interior, Agriculture, and Defense and the Chairman of the Board of the Tennessee Valley Authority shall—

(a) develop plans for surveying lands under their control to determine the nature and extent of archaeological resources on those lands;

(b) prepare a schedule for surveying lands that are likely to contain the most scientifically valuable archaeological resources; and

(c) develop documents for the reporting of suspected violations of this Act and establish when and how those documents are to be completed by officers, employees, and agents of their respective agencies.

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authorized by section 2(a)(5) of the Randolph-Sheppard Act, as amended (20 U.S.C. 107(a)(5)).

§ 228.15 Restriction regarding animals.

No animals except guide dogs for the blind or hearing impaired, or guard or search dogs used by authorized state or federal officials, shall be brought upon protected property, except as authorized by the NSA Director of Security or his designee at each Agency facility.

§ 228.16 Soliciting, vending, and debt collection.

Commercial or political soliciting, vending of all kinds, displaying or distributing commercial advertising, collecting private debts or soliciting alms on protected property is prohibited. This does not apply to:

(a) National or local drives for welfare, health, or other purposes as authorized by the "Manual on Fund Raising Within the Federal Service," issued by the U.S. Office of Personnel Management under Executive Order 12353, 47 FR 12785, 3 CFR, 1982 Comp., p. 139, or by other federal laws or regulations; and

(b) Authorized employee notices posted on Agency bulletin boards.

§ 228.17 Distribution of unauthorized materials.

Distributing, posting or affixing materials, such as pamphlets, handbills, or flyers, on protected property is prohibited, except as provided by § 228.16, as authorized by the NSA Director of Security or his designee at each Agency facility, or when conducted as part of authorized Government activities.

§ 228.18 Penalties and the effect on other laws.

Whoever shall be found guilty of violating any provision of these regulations is subject to a fine of not more than $50 or imprisonment of not more than 30 days, or both. In the case of traffic and parking violations, fines assessed shall be in accordance with the schedule(s) of fines adopted by the United States District Court for the District where the offense occurred. Nothing in these regulations shall be construed to abrogate or supersede any other Federal laws or any State or local laws or regulations applicable to any area in which the protected property is situated.

PART 229—PROTECTION OF ARCHAEOLOGICAL RESOURCES: UNIFORM REGULATIONS

Sec.

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The information collection and reporting requirements in this part were approved by the Office of Management and Budget under control number 1024–0037.

AUTHORITY: Pub. L. 96–95, 93 Stat. 721, as amended, 102 Stat. 2983 (16 U.S.C. 470aa–mm) Sec. 10(a). Related Authority: Pub. L. 59–209, 34 Stat. 225 (16 U.S.C. 432, 433); Pub. L. 86–523, 74 Stat. 220, 221 (16 U.S.C. 469), as amended, 88 Stat. 174 (1974); Pub. L. 89–665, 80 Stat. 915 (16 U.S.C. 470a–t), as amended, 84 Stat. 204 (1970), 87 Stat. 139 (1973), 90 Stat. 1320 (1976), 92 Stat. 3467 (1978), 94 Stat. 2987 (1980); Pub. L. 95–341, 92 Stat. 469 (42 U.S.C. 1996).

SOURCE: 72 FR 42298, August 2, 2007, unless otherwise noted.

§ 229.1 Purpose.

(a) The regulations in this part implement provisions of the Archaeological Resources Protection Act of 1979, as amended (16 U.S.C. 470aa–mm)

by establishing the uniform definitions, standards, and procedures to be followed by all Federal land managers in providing protection for archaeological resources, located on public lands and Indian lands of the United States. These regulations enable Federal land managers to protect archaeological resources, taking into consideration provisions of the American Indian Religious Freedom Act (92 Stat. 469; 42 U.S.C. 1996), through permits authorizing excavation and/or removal of archaeological resources, through civil penalties for unauthorized excavation and/or removal, through provisions for the preservation of archaeological resource collections and data, and through provisions for ensuring confidentiality of information about archaeological resources when disclosure would threaten the archaeological resources.

(b) The regulations in this part do not impose any new restrictions on activities permitted under other laws, authorities, and regulations relating to mining, mineral leasing, reclamation, and other multiple uses of the public lands.

§ 229.2 Authority.

(a) The regulations in this part are promulgated pursuant to section 10(a) of the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470ii), which requires that the Secretaries of the Interior, Agriculture and Defense and the Chairman of the Board of the Tennessee Valley Authority jointly develop uniform rules and regulations for carrying out the purposes of the Act.

(b) In addition to the regulations in this part, section 10(b) of the Act (16 U.S.C. 470ii) provides that each Federal land manager shall promulgate such rules and regulations, consistent with the uniform rules and regulations in this part, as may be necessary for carrying out the purposes of the Act.

§ 229.3 Definitions.

As used for purposes of this part:

(a) *Archaeological resource* means any material remains of human life or activities which are at least 100 years of age, and which are of archaeological interest.

(1) *Of archaeological interest* means capable of providing scientific or humanistic understandings of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques such as controlled observation, contextual measurement, controlled collection, analysis, interpretation and explanation.

(2) *Material remains* means physical evidence of human habitation, occupation, use, or activity, including the site, location, or context in which such evidence is situated.

(3) The following classes of material remains (and illustrative examples), if they are at least 100 years of age, are of archaeological interest and shall be considered archaeological resources unless determined otherwise pursuant to paragraph (a)(4) or (a)(5) of this section:

(i) Surface or subsurface structures, shelters, facilities, or features (including, but not limited to, domestic structures, storage structures, cooking structures, ceremonial structures, artificial mounds, earthworks, fortifications, canals, reservoirs, horticultural/agricultural gardens or fields, bedrock mortars or grinding surfaces, rock alignments, cairns, trails, borrow pits, cooking pits, refuse pits, burial pits or graves, hearths, kilns, post molds, wall trenches, middens);

(ii) Surface or subsurface artifact concentrations or scatters;

(iii) Whole or fragmentary tools, implements, containers, weapons and weapon projectiles, clothing, and ornaments (including, but not limited to, pottery and other ceramics, cordage, basketry and other weaving, bottles and other glassware, bone, ivory, shell, metal, wood, hide, feathers, pigments, and flaked, ground, or pecked stone);

(iv) By-products, waste products, or debris resulting from manufacture or use of human-made or natural materials;

(v) Organic waste (including, but not limited to, vegetal and animal remains, coprolites);

(vi) Human remains (including, but not limited to, bone, teeth, mummified flesh, burials, cremations);

(vii) Rock carvings, rock paintings, intaglios and other works of artistic or symbolic representation;

(viii) Rockshelters and caves or portions thereof containing any of the above material remains;

(ix) All portions of shipwrecks (including, but not limited to, armaments, apparel, tackle, cargo);

(x) Any portion or piece of any of the foregoing.

(4) The following material remains shall not be considered of archaeological interest, and shall not be considered to be archaeological resources for purposes of the Act and this part, unless found in a direct physical relationship with archaeological resources as defined in this section:

(i) Paleontological remains;

(ii) Coins, bullets, and unworked minerals and rocks.

(5) The Federal land manager may determine that certain material remains, in specified areas under the Federal land manager's jurisdiction, and under specified circumstances, are not or are no longer of archaeological interest and are not to be considered archaeological resources under this part. Any determination made pursuant to this subparagraph shall be documented. Such determination shall in no way affect the Federal land manager's obligations under other applicable laws or regulations.

(6) For the disposition following lawful removal or excavations of Native American human remains and "cultural items", as defined by the Native American Graves Protection and Repatriation Act (NAGPRA; Pub. L. 101–601; 104 Stat. 3050; 25 U.S.C. 3001–13), the Federal land manager is referred to NAGPRA and its implementing regulations.

(b) *Arrowhead* means any projectile point which appears to have been designed for use with an arrow.

(c) *Federal land manager* means:

(1) With respect to any public lands, the secretary of the department, or the head of any other agency or instrumentality of the United States, having primary management authority over such lands, including persons to whom such management authority has been officially delegated;

(2) In the case of Indian lands, or any public lands with respect to which no department, agency or instrumentality has primary management authority, such term means the Secretary of the Interior;

(3) The Secretary of the Interior, when the head of any other agency or instrumentality has, pursuant to section 3(2) of the Act and with the consent of the Secretary of the Interior, delegated to the Secretary of the Interior the responsibilities (in whole or in part) in this part.

(d) *Public lands* means:

(1) Lands which are owned and administered by the United States as part of the national park system, the national wildlife refuge system, or the national forest system; and

(2) All other lands the fee title to which is held by the United States, except lands on the Outer Continental Shelf, lands under the jurisdiction of the Smithsonian Institution, and Indian lands.

(e) *Indian lands* means lands of Indian tribes, or Indian individuals, which are either held in trust by the United States or subject to a restriction against alienation imposed by the United States, except for subsurface interests not owned or controlled by an Indian tribe or Indian individual.

(f) *Indian tribe as defined in the Act* means any Indian tribe, band, nation, or other organized group or community, including any Alaska village or regional or village corporation as defined in, or established pursuant to, the Alaska Native Claims Settlement Act (85 Stat. 688). In order to clarify this statutory definition for purposes of this part, "Indian tribe" means:

(1) Any tribal entity which is included in the annual list of recognized tribes published in the FEDERAL REGISTER by the Secretary of the Interior pursuant to 25 CFR part 54;

(2) Any other tribal entity acknowledged by the Secretary of the Interior pursuant to 25 CFR part 54 since the most recent publication of the annual list; and

(3) Any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act (85

Stat. 688), and any Alaska Native village or tribe which is recognized by the Secretary of the Interior as eligible for services provided by the Bureau of Indian Affairs.

(g) *Person* means an individual, corporation, partnership, trust, institution, association, or any other private entity, or any officer, employee, agent, department, or instrumentality of the United States, or of any Indian tribe, or of any State or political subdivision thereof.

(h) *State* means any of the fifty states, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

(i) *Act* means the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa–mm).

§ 229.4 Prohibited acts and criminal penalties.

(a) Under section 6(a) of the Act, no person may excavate, remove, damage, or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless such activity is pursuant to a permit issued under § 229.8 or exempted by § 229.5(b) of this part.

(b) No person may sell, purchase, exchange, transport, or receive any archaeological resource, if such resource was excavated or removed in violation of:

(1) The prohibitions contained in paragraph (a) of this section; or

(2) Any provision, rule, regulation, ordinance, or permit in effect under any other provision of Federal law.

(c) Under section (d) of the Act, any person who knowingly violates or counsels, procures, solicits, or employs any other person to violate any prohibition contained in section 6 (a), (b), or (c) of the Act will, upon conviction, be fined not more than $10,000.00 or imprisoned not more than one year, or both: provided, however, that if the commercial or archaeological value of the archaeological resources involved and the cost of restoration and repair of such resources exceeds the sum of $500.00, such person will be fined not more than $20,000.00 or imprisoned not more than two years, or both. In the case of a second or subsequent such violation upon conviction such person will be fined not more than $100,000.00, or imprisoned not more than 5 years, or both.

§ 229.5 Permit requirements and exceptions.

(a) Any person proposing to excavate and/or remove archaeological resources from public lands or Indian lands, and to carry out activities associated with such excavation and/or removal, shall apply to the Federal land manager for a permit for the proposed work, and shall not begin the proposed work until a permit has been issued. The Federal land manager may issue a permit to any qualified person, subject to appropriate terms and conditions, provided that the person applying for a permit meets conditions in § 229.8(a) of this part.

(b) Exceptions:

(1) No permit shall be required under this part for any person conducting activities on the public lands under other permits, leases, licenses, or entitlements for use, when those activities are exclusively for purposes other than the excavation and/or removal of archaeological resources, even though those activities might incidentally result in the disturbance of archaeological resources. General earth-moving excavation conducted under a permit or other authorization shall not be construed to mean excavation and/or removal as used in this part. This exception does not, however, affect the Federal land manager's responsibility to comply with other authorities which protect archaeological resources prior to approving permits, leases, licenses, or entitlements for use; any excavation and/or removal of archaeological resources required for compliance with those authorities shall be conducted in accordance with the permit requirements of this part.

(2) No permit shall be required under this part for any person collecting for private purposes any rock, coin, bullet, or mineral which is not an archaeological resource as defined in this part, provided that such collecting does not result in disturbance of any archaeological resource.

(3) No permit shall be required under this part or under section 3 of the Act of June 8, 1906 (16 U.S.C. 432), for the

excavation or removal by any Indian tribe or member thereof of any archaeological resource located on Indian lands of such Indian tribe, except that in the absence of tribal law regulating the excavation or removal or archaeological resources on Indian lands, an individual tribal member shall be required to obtain a permit under this part;

(4) No permit shall be required under this part for any person to carry out any archaeological activity authorized by a permit issued under section 3 of the Act of June 8, 1906 (16 U.S.C. 432), before the enactment of the Archaeological Resources Protection Act of 1979. Such permit shall remain in effect according to its terms and conditions until expiration.

(5) No permit shall be required under section 3 of the Act of June 8, 1906 (16 U.S.C. 432) for any archaeological work for which a permit is issued under this part.

(c) Persons carrying out official agency duties under the Federal land manager's direction, associated with the management of archaeological resources, need not follow the permit application procedures of § 229.6. However, the Federal land manager shall insure that provisions of § 229.8 and § 229.9 have been met by other documented means, and that any official duties which might result in harm to or destruction of any Indian tribal religious or cultural site, as determined by the Federal land manager, have been the subject of consideration under § 229.7.

(d) Upon the written request of the Governor of any State, on behalf of the State or its educational institutions, the Federal land manager shall issue a permit, subject to the provisions of §§ 229.5(b)(5), 229.7, 229.8(a)(3), (4), (5), (6), and (7), 229.9, 229.10, 229.12, and 229.13(a) to such Governor or to such designee as the Governor deems qualified to carry out the intent of the Act, for purposes of conducting archaeological research, excavating and/or removing archaeological resources, and safeguarding and preserving any materials and data collected in a university, museum, or other scientific or educational institution approved by the Federal land manager.

(e) Under other statutory, regulatory, or administrative authorities governing the use of public lands and Indian lands, authorizations may be required for activities which do not require a permit under this part. Any person wishing to conduct on public lands or Indian lands any activities related to but believed to fall outside the scope of this part should consult with the Federal land manager, for the purpose of determining whether any authorization is required, prior to beginning such activities.

§ 229.6 Application for permits and information collection.

(a) Any person may apply to the appropriate Federal land manager for a permit to excavate and/or remove archaeological resources from public lands or Indian lands and to carry out activities associated with such excavation and/or removal.

(b) Each application for a permit shall include:

(1) The nature and extent of the work proposed, including how and why it is proposed to be conducted, proposed time of performance, locational maps, and proposed outlet for public written dissemination of the results.

(2) The name and address of the individual(s) proposed to be responsible for conducting the work, institutional affiliation, if any, and evidence of education, training, and experience in accord with the minimal qualifications listed in § 229.8(a).

(3) The name and address of the individual(s), if different from the individual(s) named in paragraph (b)(2) of this section, proposed to be responsible for carrying out the terms and conditions of the permit.

(4) Evidence of the applicant's ability to initiate, conduct, and complete the proposed work, including evidence of logistical support and laboratory facilities.

(5) Where the application is for the excavation and/or removal of archaeological resources on public lands, the names of the university, museum, or other scientific or educational institution in which the applicant proposes to store all collections, and copies of records, data, photographs, and other documents derived from the proposed

work. Applicants shall submit written certification, signed by an authorized official of the institution, of willingness to assume curatorial responsibility for the collections, records, data, photographs and other documents and to safeguard and preserve these materials as property of the United States.

(6) Where the application is for the excavation and/or removal of archaeological resources on Indian lands, the name of the university, museum, or other scientific or educational institution in which the applicant proposes to store copies of records, data, photographs, and other documents derived from the proposed work, and all collections in the event the Indian owners do not wish to take custody or otherwise dispose of the archaeological resources. Applicants shall submit written certification, signed by an authorized official of the institution, or willingness to assume curatorial responsibility for the collections, if applicable, and/or the records, data, photographs, and other documents derived from the proposed work.

(c) The Federal land manager may require additional information, pertinent to land management responsibilities, to be included in the application for permit and shall so inform the applicant.

(d) *Paperwork Reduction Act*. The information collection requirement contained in this section of these regulations has been approved by the Office of Management and Budget under 44 U.S.C. 3501 *et seq*. and assigned clearance number 1024–0037. The purpose of the information collection is to meet statutory and administrative requirements in the public interest. The information will be used to assist Federal land managers in determining that applicants for permits are qualified, that the work proposed would further archaeological knowledge, that archaeological resources and associated records and data will be properly preserved, and that the permitted activity would not conflict with the management of the public lands involved. Response to the information requirement is necessary in order for an applicant to obtain a benefit.

§ 229.7 Notification to Indian tribes of possible harm to, or destruction of, sites on public lands having religious or cultural importance.

(a) If the issuance of a permit under this part may result in harm to, or destruction of, any Indian tribal religious or cultural site on public lands, as determined by the Federal land manager, at least 30 days before issuing such a permit the Federal land manager shall notify any Indian tribe which may consider the site as having religious or cultural importance. Such notice shall not be deemed a disclosure to the public for purposes of section 9 of the Act.

(1) Notice by the Federal land manager to any Indian tribe shall be sent to the chief executive officer or other designated official of the tribe. Indian tribes are encouraged to designate a tribal official to be the focal point for any notification and discussion between the tribe and the Federal land manager.

(2) The Federal land manager may provide notice to any other Native American group that is known by the Federal land manager to consider sites potentially affected as being of religious or cultural importance.

(3) Upon request during the 30-day period, the Federal land manager may meet with official representatives of any Indian tribe or group to discuss their interests, including ways to avoid or mitigate potential harm or destruction such as excluding sites from the permit area. Any mitigation measures which are adopted shall be incorporated into the terms and conditions of the permit under § 229.9.

(4) When the Federal land manager determines that a permit applied for under this part must be issued immediately because of an imminent threat of loss or destruction of an archaeological resource, the Federal land manager shall so notify the appropriate tribe.

(b)(1) In order to identify sites of religious or cultural importance, the Federal land manager shall seek to identify all Indian tribes having aboriginal or historic ties to the lands under the Federal land manager's jurisdiction and seek to determine, from the chief executive officer or other designated official of any such tribe, the location

and nature of specific sites of religious or cultural importance so that such information may be on file for land management purposes. Information on sites eligible for or included in the National Register of Historic Places may be withheld from public disclosure pursuant to section 304 of the Act of October 15, 1966, as amended (16 U.S.C. 470w–3).

(2) If the Federal land manager becomes aware of a Native American group that is not an Indian tribe as defined in this part but has aboriginal or historic ties to public lands under the Federal land manager's jurisdiction, the Federal land manager may seek to communicate with official representatives of that group to obtain information on sites they may consider to be of religious or cultural importance.

(3) The Federal land manager may enter into agreement with any Indian tribe or other Native American group for determining locations for which such tribe or group wishes to receive notice under this section.

(4) The Federal land manager should also seek to determine, in consultation with official representatives of Indian tribes or other Native American groups, what circumstances should be the subject of special notification to the tribe or group after a permit has been issued. Circumstances calling for notification might include the discovery of human remains. When circumstances for special notification have been determined by the Federal land manager, the Federal land manager will include a requirement in the terms and conditions of permits, under § 229.9(c), for permittees to notify the Federal land manager immediately upon the occurrence of such circumstances. Following the permittee's notification, the Federal land manager will notify and consult with the tribe or group as appropriate. In cases involving Native American human remains and other "cultural items", as defined by NAGPRA, the Federal land manager is referred to NAGPRA and its implementing

§ 229.8 Issuance of permits.

(a) The Federal land manager may issue a permit, for a specified period of time appropriate to the work to be conducted, upon determining that:

(1) The applicant is appropriately qualified, as evidenced by training, education, and/or experience, and possesses demonstrable competence in archaeological theory and methods, and in collecting, handling, analyzing, evaluating, and reporting archaeological data, relative to the type and scope of the work proposed, and also meets the following minimum qualifications:

(i) A graduate degree in anthropology or archaeology, or equivalent training and experience;

(ii) The demonstrated ability to plan, equip, staff, organize, and supervise activity of the type and scope proposed;

(iii) The demonstrated ability to carry research to completion, as evidenced by timely completion of theses, research reports, or similar documents;

(iv) Completion of at least 16 months of professional experience and/or specialized training in archaeological field, laboratory, or library research, administration, or management, including at least 4 months experience and/or specialized training in the kind of activity the individual proposes to conduct under authority of a permit; and

(v) Applicants proposing to engage in historical archaeology should have had at least one year of experience in research concerning archaeological resources of the historic period. Applicants proposing to engage in prehistoric archaeology should have had at least one year of experience in research concerning archaeological resources of the prehistoric period.

(2) The proposed work is to be undertaken for the purpose of furthering archaeological knowledge in the public interest, which may include but need not be limited to, scientific or scholarly research, and preservation of archaeological data;

(3) The proposed work, including time, scope, location, and purpose, is not inconsistent with any management plan or established policy, objectives, or requirements applicable to the management of the public lands concerned;

(4) Where the proposed work consists of archaeological survey and/or data recovery undertaken in accordance with other approved uses of the public lands or Indian lands, and the proposed work

has been agreed to in writing by the Federal land manager pursuant to section 106 of the National Historic Preservation Act (16 U.S.C. 470f), paragraphs (a) (2) and (a) (3) shall be deemed satisfied by the prior approval.

(5) Written consent has been obtained, for work proposed on Indian lands, from the Indian landowner and the Indian tribe having jurisdiction over such lands;

(6) Evidence is submitted to the Federal land manager that any university, museum, or other scientific or educational institution proposed in the application as the repository possesses adequate curatorial capability for safeguarding and preserving the archaeological resources and all associated records; and

(7) The applicant has certified that, not later than 90 days after the date the final report is submitted to the Federal land manager, the following will be delivered to the appropriate official of the approved university, museum, or other scientific or educational institution, which shall be named in the permit:

(i) All artifacts, samples, collections, and copies of records, data, photographs, and other documents resulting from work conducted under the requested permit where the permit is for the excavation and/or removal of archaeological resources from public lands.

(ii) All artifacts, samples and collections resulting from work under the requested permit for which the custody or disposition is not undertaken by the Indian owners, and copies of records, data, photographs, and other documents resulting from work conducted under the requested permit, where the permit is for the excavation and/or removal of archaeological resources from Indian lands.

(b) When the area of the proposed work would cross jurisdictional boundaries, so that permit applications must be submitted to more than one Federal land manager, the Federal land manager shall coordinate the review and evaluation of applications and the issuance of permits.

§ 229.9 Terms and conditions of permits.

(a) In all permits issued, the Federal land manager shall specify:

(1) The nature and extent of work allowed and required under the permit, including the time, duration, scope, location, and purpose of the work;

(2) The name of the individual(s) responsible for conducting the work and, if different, the name of the individual(s) responsible for carrying out the terms and conditions of the permit;

(3) The name of any university, museum, or other scientific or educational institutions in which any collected materials and data shall be deposited; and

(4) Reporting requirements.

(b) The Federal land manager may specify such terms and conditions as deemed necessary, consistent with this part, to protect public safety and other values and/or resources, to secure work areas, to safeguard other legitimate land uses, and to limit activities incidental to work authorized under a permit.

(c) The Federal land manager shall include in permits issued for archaeological work on Indian lands such terms and conditions as may be requested by the Indian landowner and the Indian tribe having jurisdiction over the lands, and for archaeological work on public lands shall include such terms and conditions as may have been developed pursuant to § 229.7.

(d) Initiation of work or other activities under the authority of a permit signifies the permittee's acceptance of the terms and conditions of the permit.

(e) The permittee shall not be released from requirements of a permit until all outstanding obligations have been satisfied, whether or not the term of the permit has expired.

(f) The permittee may request that the Federal land manager extend or modify a permit.

(g) The permittee's performance under any permit issued for a period greater than 1 year shall be subject to review by the Federal land manager, at least annually.

§ 229.10 Suspension and revocation of permits.

(a) *Suspension or revocation for cause.* (1) The Federal land manager may suspend a permit issued pursuant to this part upon determining that the permittee has failed to meet any of the terms and conditions of the permit or has violated any prohibition of the Act or § 229.4. The Federal land manager shall provide written notice to the permittee of the suspension, the cause thereof, and the requirements which must be met before the suspension will be removed.

(2) The Federal land manager may revoke a permit upon assessment of a civil penalty under § 229.15 upon the permittee's conviction under section 6 of the Act, or upon determining that the permittee has failed after notice under this section to correct the situation which led to suspension of the permit.

(b) *Suspension or revocation for management purposes.* The Federal land manager may suspend or revoke a permit, without liability to the United States, its agents, or employees, when continuation of work under the permit would be in conflict with management requirements not in effect when the permit was issued. The Federal land manager shall provide written notice to the permittee stating the nature of and basis for the suspension or revocation.

§ 229.11 Appeals relating to permits.

Any affected person may appeal permit issuance, denial of permit issuance, suspension, revocation, and terms and conditions of a permit through existing administrative appeal procedures, or through procedures which may be established by the Federal land manager pursuant to section 10(b) of the Act and this part.

§ 229.12 Relationship to section 106 of the National Historic Preservation Act.

Issuance of a permit in accordance with the Act and this part does not constitute an undertaking requiring compliance with section 106 of the Act of October 15, 1966 (16 U.S.C. 470f). However, the mere issuance of such a permit does not excuse the Federal land manager from compliance with section 106 where otherwise required.

§ 229.13 Custody of archaeological resources.

(a) Archaeological resources excavated or removed from the public lands remain the property of the United States.

(b) Archaeological resources excavated or removed from Indian lands remain the property of the Indian or Indian tribe having rights of ownership over such resources.

(c) The Secretary of the Interior may promulgate regulations providing for the exchange of archaeological resources among suitable universities, museums, or other scientific or educational institutions, for the ultimate disposition of archaeological resources, and for standards by which archaeological resources shall be preserved and maintained, when such resources have been excavated or removed from public lands and Indian lands.

(d) In the absence of regulations referenced in paragraph (c) of this section, the Federal land manager may provide for the exchange of archaeological resources among suitable universities, museums, or other scientific or educational institutions, when such resources have been excavated or removed from public lands under the authority of a permit issued by the Federal land manager.

(e) Notwithstanding the provisions of paragraphs (a) through (d) of this section, the Federal land manager will follow the procedures required by NAGPRA and its implementing regulations for determining the disposition of Native American human remains and other "cultural items", as defined by NAGPRA, that have been excavated, removed, or discovered on public lands.

§ 229.14 Determination of archaeological or commercial value and cost of restoration and repair.

(a) *Archaeological value.* For purposes of this part, the archaeological value of any archaeological resource involved in a violation of the prohibitions in § 229.4 of this part or conditions of a permit issued pursuant to this part shall be the value of the information

associated with the archaeological resource. This value shall be appraised in terms of the costs of the retrieval of the scientific information which would have been obtainable prior to the violation. These costs may include, but need not be limited to, the cost of preparing a research design, conducting field work, carrying out laboratory analysis, and preparing reports as would be necessary to realize the information potential.

(b) *Commercial value*. For purposes of this part, the commercial value of any archaeological resource involved in a violation of the prohibitions in § 229.4 of this part or conditions of a permit issued pursuant to this part shall be its fair market value. Where the violation has resulted in damage to the archaeological resource, the fair market value should be determined using the condition of the archaeological resource prior to the violation, to the extent that its prior condition can be ascertained.

(c) *Cost of restoration and repair*. For purposes of this part, the cost of restoration and repair of archaeological resources damaged as a result of a violation of prohibitions or conditions pursuant to this part, shall be the sum of the costs already incurred for emergency restoration or repair work, plus those costs projected to be necessary to complete restoration and repair, which may include, but need not be limited to, the costs of the following:

(1) Reconstruction of the archaeological resource;

(2) Stabilization of the archaeological resource;

(3) Ground contour reconstruction and surface stabilization;

(4) Research necessary to carry out reconstruction or stabilization;

(5) Physical barriers or other protective devices, necessitated by the disturbance of the archaeological resource, to protect it from further disturbance;

(6) Examination and analysis of the archaeological resource including recording remaining archaeological information, where necessitated by disturbance, in order to salvage remaining values which cannot be otherwise conserved;

(7) Reinterment of human remains in accordance with religious custom and State, local, or tribal law, where appropriate, as determined by the Federal land manager.

(8) Preparation of reports relating to any of the above activities.

§ 229.15 Assessment of civil penalties.

(a) The Federal land manager may assess a civil penalty against any person who has violated any prohibition contained in § 229.4 or who has violated any term or condition included in a permit issued in accordance with the Act and this part.

(b) *Notice of violation*. The Federal land manager shall serve a notice of violation upon any person believed to be subject to a civil penalty, either in person or by registered or certified mail (return receipt requested). The Federal land manager shall include in the notice:

(1) A concise statement of the facts believed to show a violation;

(2) A specific reference to the provision(s) of this part or to a permit issued pursuant to this part allegedly violated;

(3) The amount of penalty proposed to be assessed, including any initial proposal to mitigate or remit where appropriate, or a statement that notice of a proposed penalty amount will be served after the damages associated with the alleged violation have been ascertained;

(4) Notification of the right to file a petition for relief pursuant to paragraph (d) of this section, or to await the Federal land manager's notice of assessment, and to request a hearing in accordance with paragraph (g) of this section. The notice shall also inform the person of the right to seek judicial review of any final administrative decision assessing a civil penalty.

(c) The person served with a notice of violation shall have 45 calendar days from the date of its service (or the date of service of a proposed penalty amount, if later) in which to respond. During this time the person may:

(1) Seek informal discussions with the Federal land manager;

(2) File a petition for relief in accordance with paragraph (d) of this section;

(3) Take no action and await the Federal land manager's notice of assessment;

(4) Accept in writing or by payment the proposed penalty, or any mitigation or remission offered in the notice. Acceptance of the proposed penalty or mitigation or remission shall be deemed a waiver of the notice of assessment and of the right to request a hearing under paragraph (g) of this section.

(d) *Petition for relief*. The person served with a notice of violation may request that no penalty be assessed or that the amount be reduced, by filing a petition for relief with the Federal land manager within 45 calendar days of the date of service of the notice of violation (or of a proposed penalty amount, if later). The petition shall be in writing and signed by the person served with the notice of violation. If the person is a corporation, the petition must be signed by an officer authorized to sign such documents. The petition shall set forth in full the legal or factual basis for the requested relief.

(e) *Assessment of penalty*. (1) The Federal land manager shall assess a civil penalty upon expiration of the period for filing a petition for relief, upon completion of review of any petition filed, or upon completion of informal discussions, whichever is later.

(2) The Federal land manager shall take into consideration all available information, including information provided pursuant to paragraphs (c) and (d) of this section or furnished upon further request by the Federal land manager.

(3) If the facts warrant a conclusion that no violation has occurred, the Federal land manager shall so notify the person served with a notice of violation, and no penalty shall be assessed. (4) Where the facts warrant a conclusion that a violation has occurred, the Federal land manager shall determine a penalty amount in accordance with § 229.16.

(f) *Notice of assessment*. The Federal land manager shall notify the person served with a notice of violation of the penalty amount assessed by serving a written notice of assessment, either in person or by registered or certified mail (return receipt requested). The Federal land manager shall include in the notice of assessment:

(1) The facts and conclusions from which it was determined that a violation did occur;

(2) The basis in § 229.16 for determining the penalty amount assessed and/or any offer to mitigate or remit the penalty; and

(3) Notification of the right to request a hearing, including the procedures to be followed, and to seek judicial review of any final administrative decision assessing a civil penalty.

(g) *Hearings*. (1) Except where the right to request a hearing is deemed to have been waived as provided in paragraph (c)(4) of this section, the person served with a notice of assessment may file a written request for a hearing with the adjudicatory body specified in the notice. The person shall enclose with the request for hearing a copy of the notice of assessment, and shall deliver the request as specified in the notice of assessment, personally or by registered or certified mail (return receipt requested).

(2) Failure to deliver a written request for a hearing within 45 days of the date of service of the notice of assessment shall be deemed a waiver of the right to a hearing.

(3) Any hearing conducted pursuant to this section shall be held in accordance with 5 U.S.C. 554. In any such hearing, the amount of civil penalty assessed shall be determined in accordance with this part, and shall not be limited by the amount assessed by the Federal land manager under paragraph (f) of this section or any offer of mitigation or remission made by the Federal land manager.

(h) *Final administrative decision*. (1) Where the person served with a notice of violation has accepted the penalty pursuant to paragraph (c)(4) of this section, the notice of violation shall constitute the final administrative decision;

(2) Where the person served with a notice of assessment has not filed a timely request for a hearing pursuant to paragraph (g)(1) of this section, the notice of assessment shall constitute the final administrative decision;

(3) Where the person served with a notice of assessment has filed a timely

request for a hearing pursuant to paragraph (g)(1) of this section, the decision resulting from the hearing or any applicable administrative appeal therefrom shall constitute the final administrative decision.

(i) *Payment of penalty.* (1) The person assessed a civil penalty shall have 45 calendar days from the date of issuance of the final administrative decision in which to make full payment of the penalty assessed, unless a timely request for appeal has been filed with a U.S. District Court as provided in section 7(b)(1) of the Act.

(2) Upon failure to pay the penalty, the Federal land manager may request the Attorney General to institute a civil action to collect the penalty in a U.S. District Court for any district in which the person assessed a civil penalty is found, resides, or transacts business. Where the Federal land manager is not represented by the Attorney General, a civil action may be initiated directly by the Federal land manager.

(j) *Other remedies not waived.* Assessment of a penalty under this section shall not be deemed a waiver of the right to pursue other available legal or administrative remedies.

§ 229.16 Civil penalty amounts.

(a) *Maximum amount of penalty.* (1) Where the person being assessed a civil penalty has not committed any previous violation of any prohibition in § 229.4 or of any term or condition included in a permit issued pursuant to this part, the maximum amount of the penalty shall be the full cost of restoration and repair of archaeological resources damaged plus the archaeological or commercial value of archaeological resources destroyed or not recovered.

(2) Where the person being assessed a civil penalty has committed any previous violation of any prohibition in § 229.4 or of any term or condition included in a permit issued pursuant to this part, the maximum amount of the penalty shall be double the cost of restoration and repair plus double the archaeological or commercial value of archaeological resources destroyed or not recovered.

(3) Violations limited to the removal of arrowheads located on the surface of the ground shall not be subject to the penalties prescribed in this section.

(b) *Determination of penalty amount, mitigation, and remission.* The Federal land manager may assess a penalty amount less than the maximum amount of penalty and may offer to mitigate or remit the penalty.

(1) Determination of the penalty amount and/or a proposal to mitigate or remit the penalty may be based upon any of the following factors:

(i) Agreement by the person being assessed a civil penalty to return to the Federal land manager archaeological resources removed from public lands or Indian lands;

(ii) Agreement by the person being assessed a civil penalty to assist the Federal land manager in activity to preserve, restore, or otherwise contribute to the protection and study of archaeological resources on public lands or Indian lands;

(iii) Agreement by the person being assessed a civil penalty to provide information which will assist in the detection, prevention, or prosecution of violations of the Act or this part;

(iv) Demonstration of hardship or inability to pay, provided that this factor shall only be considered when the person being assessed a civil penalty has not been found to have previously violated the regulations in this part;

(v) Determination that the person being assessed a civil penalty did not willfully commit the violation;

(vi) Determination that the proposed penalty would constitute excessive punishment under the circumstances;

(vii) Determination of other mitigating circumstances appropriate to consideration in reaching a fair and expeditious assessment.

(2) When the penalty is for a violation on Indian lands, the Federal land manager shall consult with and consider the interests of the Indian landowner and the Indian tribe having jurisdiction over the Indian lands prior to proposing to mitigate or remit the penalty.

(3) When the penalty is for a violation which may have had an effect on a known Indian tribal religious or cultural site on public lands, the Federal land manager should consult with and consider the interests of the affected

tribe(s) prior to proposing to mitigate or remit the penalty.

§ 229.17 Other penalties and rewards.

(a) Section 6 of the Act contains criminal prohibitions and provisions for criminal penalties. Section 8(b) of the Act provides that archaeological resources, vehicles, or equipment involved in a violation may be subject to forfeiture.

(b) Section 8(a) of the Act provides for rewards to be made to persons who furnish information which leads to conviction for a criminal violation or to assessment of a civil penalty. The Federal land manager may certify to the Secretary of the Treasury that a person is eligible to receive payment. Officers and employees of Federal, State, or local government who furnish information or render service in the performance of their official duties, and persons who have provided information under § 229.16(b)(1)(iii) shall not be certified eligible to receive payment of rewards.

(c) In cases involving Indian lands, all civil penalty monies and any item forfeited under the provisions of this section shall be transferred to the appropriate Indian or Indian tribe.

§ 229.18 Confidentiality of archaeological resource information.

(a) The Federal land manager shall not make available to the public, under subchapter II of chapter 5 of title 5 of the U.S. Code or any other provision of law, information concerning the nature and location of any archaeological resource, with the following exceptions:

(1) The Federal land manager may make information available, provided that the disclosure will further the purposes of the Act and this part, or the Act of June 27, 1960, as amended (16 U.S.C. 469–469c), without risking harm to the archaeological resource or to the site in which it is located.

(2) The Federal land manager shall make information available, when the Governor of any State has submitted to the Federal land manager a written request for information, concerning the archaeological resources within the requesting Governor's State, provided that the request includes:

(i) The specific archaeological resource or area about which information is sought;

(ii) The purpose for which the information is sought; and

(iii) The Governor's written commitment to adequately protect the confidentiality of the information.

(b) [Reserved]

§ 229.19 Report.

(a) Each Federal land manager, when requested by the Secretary of the Interior, will submit such information as is necessary to enable the Secretary to comply with section 13 of the Act and comprehensively report on activities carried out under provisions of the Act.

(b) The Secretary of the Interior will include in the annual comprehensive report, submitted to the Committee on Interior and Insular Affairs of the United States House of Representatives and to the Committee on Energy and Natural Resources of the United States Senate under section 13 of the Act, information on public awareness programs submitted by each Federal land manager under § 229.20(b). Such submittal will fulfill the Federal land manager's responsibility under section 10(c) of the Act to report on public awareness programs.

(c) The comprehensive report by the Secretary of the Interior also will include information on the activities carried out under section 14 of the Act. Each Federal land manager, when requested by the Secretary, will submit any available information on surveys and schedules and suspected violations in order to enable the Secretary to summarize in the comprehensive report actions taken pursuant to section 14 of the Act.

§ 229.20 Public awareness programs.

(a) Each Federal land manager will establish a program to increase public awareness of the need to protect important archaeological resources located on public and Indian lands. Educational activities required by section 10(c) of the Act should be incorporated into other current agency public education and interpretation programs where appropriate.

(b) Each Federal land manager annually will submit to the Secretary of the

Interior the relevant information on public awareness activities required by section 10(c) of the Act for inclusion in the comprehensive report on activities required by section 13 of the Act.

§ 229.21 Surveys and schedules.

(a) The Secretaries of the Interior, Agriculture, and Defense and the Chairman of the Board of the Tennessee Valley Authority will develop plans for surveying lands under each agency's control to determine the nature and extent of archaeological resources pursuant to section 14(a) of the Act. Such activities should be consistent with Federal agency planning policies and other historic preservation program responsibilities required by 16 U.S.C. 470 *et seq*. Survey plans prepared under this section will be designed to comply with the purpose of the Act regarding the protection of archaeological resources.

(b) The Secretaries of the Interior, Agriculture, and Defense and the Chairman of the Tennessee Valley Authority will prepare schedules for surveying lands under each agency's control that are likely to contain the most scientifically valuable archaeological resources pursuant to section 14(b) of the Act. Such schedules will be developed based on objectives and information identified in survey plans described in paragraph (a) of this section and implemented systematically to cover areas where the most scientifically valuable archaeological resources are likely to exist.

(c) Guidance for the activities undertaken as part of paragraphs (a) through (b) of this section is provided by the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.

(d) Other Federal land managing agencies are encouraged to develop plans for surveying lands under their jurisdictions and prepare schedules for surveying to improve protection and management of archaeological resources.

(e) The Secretaries of the Interior, Agriculture, and Defense and the Chairman of the Tennessee Valley Authority will develop a system for documenting and reporting suspected violations of the various provisions of the Act. This system will reference a set of procedures for use by officers, employees, or agents of Federal agencies to assist them in recognizing violations, documenting relevant evidence, and reporting assembled information to the appropriate authorities. Methods employed to document and report such violations should be compatible with existing agency reporting systems for documenting violations of other appropriate Federal statutes and regulations. Summary information to be included in the Secretary's comprehensive report will be based upon the system developed by each Federal land manager for documenting suspected violations.

PART 230—FINANCIAL INSTITUTIONS ON DOD INSTALLATIONS

Sec.
230.1 Purpose.
230.2 Applicability.
230.3 Definitions.
230.4 Policy.
230.5 Responsibilities.

AUTHORITY: 10 U.S.C. 136.

SOURCE: 66 FR 46373, Sept. 5, 2001, unless otherwise noted.

§ 230.1 Purpose.

This part:

(a) Updates policies and responsibilities for financial institutions that serve Department of Defense (DoD) personnel on DoD installations worldwide. Associated procedures are contained in 32 CFR part 231.

(b) Prescribes consistent arrangements for the provision of services by financial institutions among the DoD Components, and requires that financial institutions operating on DoD installations provide, and are provided, support consistent with the policies stated in this part.

§ 230.2 Applicability.

This part applies to the Office of the Secretary of Defense (OSD), the Military Departments, the Chairman of the Joint Chiefs of Staff (JCS), the Combatant Commands, the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational

APPENDIX I

Native American Graves Protection and Repatriation Act

Native American Graves Protection and Repatriation Act (as amended)
(25 U.S.C. 3001 et seq.)

Native American Graves Protection and Repatriation Act
AS AMENDED

This Act became law on November 16, 1990 (Public Law 101-601; 25 U.S.C. 3001 et seq.) and has been amended twice. This description of the Act, as amended, tracks the language of the United States Code except that (following common usage) we refer to the "Act" (meaning the Act, as amended) rather than to the "subchapter" or the "title" of the Code.

25 U.S.C. 3001, Definitions

Section 2

For purposes of this Act, the term—

(1) "**burial site**" means any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which as a part of the death rite or ceremony of a culture, individual human remains are deposited.

(2) "**cultural affiliation**" means that there is a relationship of shared group identity which can be reasonably traced historically or prehistorically between a present day Indian tribe or Native Hawaiian organization and an identifiable earlier group.

(3) "**cultural items**" means human remains and—

(A) "**associated funerary objects**" which shall mean objects that, as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, and both the human remains and associated funerary objects are presently in the possession or control of a Federal agency or museum, except that other items exclusively made for burial purposes or to contain human remains shall be considered as associated funerary objects.

(B) "**unassociated funerary objects**" which shall mean objects that, as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, where the remains are not in the possession or control of the Federal agency or museum and the objects can be identified by a preponderance of the evidence as related to specific individuals or families or to known human remains or, by a preponderance of the evidence, as having been removed from a specific burial site of an individual culturally affiliated with a particular Indian tribe,

(C) **"sacred objects"** which shall mean specific ceremonial objects which are needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present day adherents, and

(D) **"cultural patrimony"** which shall mean an object having ongoing historical, traditional, or cultural importance central to the Native American group or culture itself, rather than property owned by an individual Native American, and which, therefore, cannot be alienated, appropriated, or conveyed by any individual regardless of whether or not the individual is a member of the Indian tribe or Native Hawaiian organization and such object shall have been considered inalienable by such Native American group at the time the object was separated from such group.

(4) **"Federal agency"** means any department, agency, or instrumentality of the United States. Such term does not include the Smithsonian Institution.

(5) **"Federal lands"** means any land other than tribal lands which are controlled or owned by the United States, including lands selected by but not yet conveyed to Alaska Native Corporations and groups organized pursuant to the Alaska Native Claims Settlement Act of 1971 [43 U.S.C. 1601 et seq.].

(6) **"Hui Malama I Na Kupuna O Hawai'i Nei"** means the nonprofit, Native Hawaiian organization incorporated under the laws of the State of Hawaii by that name on April 17, 1989, for the purpose of providing guidance and expertise in decisions dealing with Native Hawaiian cultural issues, particularly burial issues.

(7) **"Indian tribe"** means any tribe, band, nation, or other organized group or community of Indians, including any Alaska Native village (as defined in, or established pursuant to, the Alaska Native Claims Settlement Act) [43 U.S.C. 1601 et seq.], which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

(8) "**museum**" means any institution or State or local government agency (including any institution of higher learning) that receives Federal funds and has possession of, or control over, Native American cultural items. Such term does not include the Smithsonian Institution or any other Federal agency.

(9) "**Native American**" means of, or relating to, a tribe, people, or culture that is indigenous to the United States.

(10) "**Native Hawaiian**" means any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii.

(11) "**Native Hawaiian organization**" means any organization which—

(A) serves and represents the interests of Native Hawaiians,

(B) has as a primary and stated purpose the provision of services to Native Hawaiians, and

(C) has expertise in Native Hawaiian Affairs, and

shall include the Office of Hawaiian Affairs and Hui Malama I Na Kupuna O Hawai'i Nei.

(12) "**Office of Hawaiian Affairs**" means the Office of Hawaiian Affairs established by the constitution of the State of Hawaii.

(13) "**right of possession**" means possession obtained with the voluntary consent of an individual or group that had authority of alienation. The original acquisition of a Native American unassociated funerary object, sacred object or object of cultural patrimony from an Indian tribe or Native Hawaiian organization with the voluntary consent of an individual or group with authority to alienate such object is deemed to give right of possession of that object, unless the phrase so defined would, as applied in section 7(c) of this Act [25 U.S.C. 3005(c)], result in a Fifth Amendment taking by the United States as determined by the United States Court of Federal Claims pursuant to

28 U.S.C. 1491 in which event the "right of possession" shall be as provided under otherwise applicable property law. The original acquisition of Native American human remains and associated funerary objects which were excavated, exhumed, or otherwise obtained with full knowledge and consent of the next of kin or the official governing body of the appropriate culturally affiliated Indian tribe or Native Hawaiian organization is deemed to give right of possession to those remains.

(14) **"Secretary"** means the Secretary of the Interior.

(15) **"tribal land"** means—

(A) all lands within the exterior boundaries of any Indian reservation;

(B) all dependent Indian communities;

(C) any lands administered for the benefit of Native Hawaiians pursuant to the Hawaiian Homes Commission Act, 1920 [42 Stat. 108], and section 4 of Public Law 86-3 [note preceding 48 U.S.C. 491].

25 U.S.C. 3002, Ownership

25 U.S.C. 3002(a), Native American human remains and objects

Section 3

(a) The ownership or control of Native American cultural items which are excavated or discovered on Federal or tribal lands after November 16, 1990, shall be (with priority given in the order listed)—

(1) in the case of Native American human remains and associated funerary objects, in the lineal descendants of the Native American; or

(2) in any case in which such lineal descendants cannot be ascertained, and in the case of unassociated funerary objects, sacred objects, and objects of cultural patrimony—

(A) in the Indian tribe or Native Hawaiian organization on whose tribal land such objects or remains were discovered;

(B) in the Indian tribe or Native Hawaiian organization which has the closest cultural affiliation with such remains or objects and which, upon notice, states a claim for such remains or objects; or

(C) if the cultural affiliation of the objects cannot be reasonably ascertained and if the objects were discovered on Federal land that is recognized by a final judgment of the Indian Claims Commission or the United States Court of Claims as the aboriginal land of some Indian tribe—

(1) [sic] in the Indian tribe that is recognized as aboriginally occupying the area in which the objects were discovered, if upon notice, such tribe states a claim for such remains or objects, or

(2) [sic] if it can be shown by a preponderance of the evidence that a different tribe has a stronger cultural relationship with the remains or objects than the tribe or organization specified in paragraph (1), in the Indian tribe that has the strongest demonstrated relationship, if upon notice, such tribe states a claim for such remains or objects.

25 U.S.C. 3002(b), Unclaimed Native American remains and objects

(b) Native American cultural items not claimed under subsection (a) of this section shall be disposed of in accordance with regulations promulgated by the Secretary in consultation with the review committee established under section 8 of this Act [25 U.S.C. 3006], Native American groups, representatives of museums and the scientific community.

25 U.S.C. 3002(c), Intentional excavation and removal of Native American human remains and objects

(c) The intentional removal from or excavation of Native American cultural items from Federal or tribal lands for purposes of discovery, study, or removal of such items is permitted only if—

(1) such items are excavated or removed pursuant to a permit issued under section 4 of the Archaeological Resources Protection Act of 1979, as amended, [16 U.S.C. 470cc] which shall be consistent with this Act;

(2) such items are excavated or removed after consultation with or, in the case of tribal lands, consent of the appropriate (if any) Indian tribe or Native Hawaiian organization;

(3) the ownership and right of control of the disposition of such items shall be as provided in subsections (a) and (b) of this section; and

(4) proof of consultation or consent under paragraph (2) is shown.

25 U.S.C. 3002(d), Inadvertent discovery of Native American remains and objects

(d)(1) Any person who knows, or has reason to know, that such person has discovered Native American cultural items on Federal or tribal lands after November 16, 1990, shall notify, in writing, the Secretary of the Department, or head of any other agency or instrumentality of the United States, having primary management authority with respect to Federal lands and the appropriate Indian tribe or Native Hawaiian organization with respect to tribal lands, if known or readily ascertainable, and, in the case of lands that have been selected by an Alaska Native Corporation or group organized pursuant to the Alaska Native Claims Settlement Act of 1971 [43 U.S.C. 1601 et seq.], the appropriate corporation or group. If the discovery occurred in connection with an activity, including (but not limited to) construction, mining, logging, and agriculture, the person shall cease the activity in the area of the discovery, make a reasonable effort to protect the items discovered before resuming such activity, and provide notice under this subsection. Following the notification under this subsection, and upon certification by the Secretary of the department or the head of any agency or instrumentality of the United States or the appropriate Indian tribe or Native Hawaiian organization that notification has been received, the activity may resume after 30 days of such certification.

(2) The disposition of and control over any cultural items excavated or removed under this subsection shall be determined as provided for in this section.

(3) If the Secretary of the Interior consents, the responsibilities (in whole or in part) under paragraphs (1) and (2) of the Secretary of any department (other than the Department of the Interior) or the head of any other agency or instrumentality may be delegated to the Secretary with respect to any land managed by such other Secretary or agency head.

25 U.S.C. 3002(e), Relinquishment

(e) Nothing in this section shall prevent the governing body of an Indian tribe or Native Hawaiian organization from expressly relinquishing control over any Native American human remains, or title to or control over any funerary object, or sacred object.

18 U.S.C. 1170, Illegal trafficking in Native American human remains and cultural items

Section 4

(a) Chapter 53 of title 18, United States Code, is amended by adding at the end thereof the following new section:

Section 1170

"(a) Whoever knowingly sells, purchases, uses for profit, or transports for sale or profit, the human remains of a Native American without the right of possession to those remains as provided in the Native American Graves Protection and Repatriation Act shall be fined in accordance with this title, or imprisoned not more than 12 months, or both, and in the case of a second or subsequent violation, be fined in accordance with this title, or imprisoned not more than 5 years, or both."

"(b) Whoever knowingly sells, purchases, uses for profit, or transports for sale or profit any Native American cultural items obtained in violation of the Native American Grave Protection and Repatriation Act shall be fined in accordance with this title, imprisoned not more than one year, or both, and in the case of a second or subsequent violation, be fined in accordance with this title, imprisoned not more than 5 years, or both."

(b) The table of contents for chapter 53 of title 18, United States Code, is amended by adding at the end thereof the following new item:

"1170, Illegal Trafficking in Native American Human Remains and Cultural Items."

25 U.S.C. 3003, Inventory for human remains and associated funerary objects

Section 5

25 U.S.C. 3003(a), In general

(a) Each Federal agency and each museum which has possession or control over holdings or collections of Native American human remains and associated funerary objects shall compile an inventory of such items and, to the extent possible based on information possessed by such museum or Federal agency, identify the geographical and cultural affiliation of such item.

25 U.S.C. 3003(b), Requirements

(b)(1) The inventories and identifications required under subsection (a) of this section shall be—

(A) completed in consultation with tribal government and Native Hawaiian organization officials and traditional religious leaders;

(B) completed by not later than the date that is 5 years after November 16, 1990, [the date of enactment of this Act], and

(C) made available both during the time they are being conducted and afterward to a review committee established under section 8 of this Act [25 U.S.C. 3006].

(2) Upon request by an Indian tribe or Native Hawaiian organization which receives or should have received notice, a museum or Federal agency shall supply additional available documentation to supplement the information required by subsection (a) of this section. The term "**documentation**" means a summary of existing museum or Federal agency records, including inventories or catalogues, relevant studies, or other pertinent data for the limited purpose of determining the geographical origin, cultural affiliation, and basic facts surrounding acquisition and accession of Native American human remains and associated funerary objects subject to this section. Such term does not mean, and this Act shall not be construed to be an authorization for, the initiation of new scientific studies of such remains and associated funerary objects or other means of acquiring or preserving additional scientific information from such remains and objects.

25 U.S.C. 3003(c), Extension of time for inventory

(c) Any museum which has made a good faith effort to carry out an inventory and identification under this section, but which has been unable to complete the process, may appeal to the Secretary for an extension of the time requirements set forth in subsection (b)(1)(B) of this section. The Secretary may extend such time requirements for any such museum upon a finding of good faith effort. An indication of good faith shall include the development of a plan to carry out the inventory and identification process.

25 U.S.C. 3003(d), Notification

(d)(1) If the cultural affiliation of any particular Native American human remains or associated funerary objects is determined pursuant to this section, the Federal agency or museum concerned shall, not later than 6 months after the completion of the inventory, notify the affected Indian tribes or Native Hawaiian organizations.

(2) The notice required by paragraph (1) shall include information—

(A) which identifies each Native American human remains or associated funerary objects and the circumstances surrounding its acquisition;

(B) which lists the human remains or associated funerary objects that are clearly identifiable as to tribal origin; and

(C) which lists the Native American human remains and associated funerary objects that are not clearly identifiable as being culturally affiliated with that Indian tribe or Native Hawaiian organization, but which, given the totality of circumstances surrounding acquisition of the remains or objects, are determined by a reasonable belief to be remains or objects culturally affiliated with the Indian tribe or Native Hawaiian organization.

(3) A copy of each notice provided under paragraph (1) shall be sent to the Secretary who shall publish each notice in the Federal Register.

25 U.S.C. 3003(e), Definition of inventory

(e) For the purposes of this section, the term **"inventory"** means a simple itemized list that summarizes the information called for by this section.

25 U.S.C. 3004, Summary for unassociated funerary objects, sacred objects, and cultural patrimony

Section 6

25 U.S.C. 3004(a), In general

(a) Each Federal agency or museum which has possession or control over holdings or collections of Native American unassociated funerary objects, sacred objects, or objects of cultural patrimony shall provide a written summary of such objects based upon available information held by such agency or museum. The summary shall describe the scope of the collection, kinds of objects included, reference to geographical location, means and period of acquisition and cultural affiliation, where readily ascertainable.

25 U.S.C. 3004(b), Requirements for the summary

(b)(1) The summary required under subsection (a) of this section shall be—

(A) in lieu of an object-by-object inventory;

(B) followed by consultation with tribal government and Native Hawaiian organization officials and traditional religious leaders; and

(C) completed by not later than the date that is 3 years after November 16, 1990, [the date of enactment of this Act].

(2) Upon request, Indian Tribes and Native Hawaiian organizations shall have access to records, catalogues, relevant studies or other pertinent data for the limited purposes of determining the geographic origin, cultural affiliation, and basic facts surrounding acquisition and accession of Native American objects subject to this section. Such information shall be provided in a reasonable manner to be agreed upon by all parties.

25 U.S.C. 3005, Repatriation

25 U.S.C. 3005(a), Repatriation of Native American human remains and objects possessed or controlled by Federal agencies and museums

Section 7

(a)(1) If, pursuant to section 5 of this Act [25 U.S.C. 3003], the cultural affiliation of Native American human remains and associated funerary objects with a particular Indian tribe or Native Hawaiian organization is established, then the Federal agency or museum, upon the request of a known lineal descendant of the Native American or of the tribe or organization and pursuant to subsections (b) and (e) of this section, shall expeditiously return such remains and associated funerary objects.

(2) If, pursuant to section 6 of this Act [25 U.S.C. 3004], the cultural affiliation with a particular Indian tribe or Native Hawaiian organization is shown with respect to unassociated funerary objects, sacred objects or objects of cultural patrimony, then the Federal agency or museum, upon the request of the Indian tribe or Native Hawaiian organization and pursuant to subsections (b), (c) and (e) of this section, shall expeditiously return such objects.

(3) The return of cultural items covered by this Act shall be in consultation with the requesting lineal descendant or tribe or organization to determine the place and manner of delivery of such items.

(4) Where cultural affiliation of Native American human remains and funerary objects has not been established in an inventory prepared pursuant to section 5 of this Act [25 U.S.C. 3003], or the summary pursuant to section 6 of this Act [25 U.S.C. 3004], or where Native American human remains and funerary objects are not included upon any such inventory, then, upon request and pursuant to subsections (b) and (e) of this section and, in the case of unassociated funerary objects, subsection (c) of this section, such Native American human remains and funerary objects shall be expeditiously returned where the requesting Indian tribe or Native Hawaiian organization can show cultural affiliation by a preponderance of the evidence based upon geographical, kinship, biological, archaeological, anthropological, linguistic, folkloric, oral traditional, historical, or other relevant information or expert opinion.

(5) Upon request and pursuant to subsections (b), (c) and (e) of this section, sacred objects and objects of cultural patrimony shall be expeditiously returned where—

(A) the requesting party is the direct lineal descendant of an individual who owned the sacred object;

(B) the requesting Indian tribe or Native Hawaiian organization can show that the object was owned or controlled by the tribe or organization; or

(C) the requesting Indian tribe or Native Hawaiian organization can show that the sacred object was owned or controlled by a member thereof, provided that in the case where a sacred object was owned by a member thereof, there are no identifiable lineal descendants of said member or the lineal descendents, upon notice, have failed to make a claim for the object under this Act.

25 U.S.C. 3005(b), Scientific study

(b) If the lineal descendant, Indian tribe, or Native Hawaiian organization requests the return of culturally affiliated Native American cultural items, the Federal agency or museum shall expeditiously return such items unless such items are indispensable for completion of a specific scientific study, the outcome of which would be of major benefit to the United States. Such items shall be returned by no later than 90 days after the date on which the scientific study is completed.

25 U.S.C. 3005(c), Standard for repatriation

(c) If a known lineal descendant or an Indian tribe or Native Hawaiian organization requests the return of Native American unassociated funerary objects, sacred objects or objects of cultural patrimony pursuant to this Act and presents evidence which, if standing alone before the introduction of evidence to the contrary, would support a finding that the Federal agency or museum did not have the right of possession, then such agency or museum shall return such objects unless it can overcome such inference and prove that it has a right of possession to the objects.

25 U.S.C. 3005(d), Sharing of information by Federal agencies and museums

(d) Any Federal agency or museum shall share what information it does possess regarding the object in question with the known lineal descendant, Indian tribe, or Native Hawaiian organization to assist in making a claim under this section.

25 U.S.C. 3005(e), Competing claims

(e) Where there are multiple requests for repatriation of any cultural item and, after complying with the requirements of this Act, the Federal agency or museum cannot clearly determine which requesting party is the most appropriate claimant, the agency or museum may retain such item until the requesting parties agree upon its disposition or the dispute is otherwise resolved pursuant to the provisions of this Act or by a court of competent jurisdiction.

25 U.S.C. 3005(f), Museum obligation

(f) Any museum which repatriates any item in good faith pursuant to this Act shall not be liable for claims by an aggrieved party or for claims of breach of fiduciary duty, public trust, or violations of state law that are inconsistent with the provisions of this Act.

25 U.S.C. 3006, Review committee

Section 8

25 U.S.C. 3006(a), Establishment

(a) Within 120 days after November 16, 1990, the Secretary shall establish a committee to monitor and review the implementation of the inventory and identification process and repatriation activities required under sections 5, 6 and 7 of this Act [25 U.S.C. 3003, 3004, and 3005].

25 U.S.C. 3006(b), Committee membership

(b)(1) The Committee established under subsection (a) of this section shall be composed of 7 members,

(A) 3 of whom shall be appointed by the Secretary from nominations submitted by Indian tribes, Native Hawaiian organizations, and traditional Native American religious leaders with at least 2 of such persons being traditional Indian religious leaders;

(B) 3 of whom shall be appointed by the Secretary from nominations submitted by national museum organizations and scientific organizations; and

(C) 1 who shall be appointed by the Secretary from a list of persons developed and consented to by all of the members appointed pursuant to subparagraphs (A) and (B).

(2) The Secretary may not appoint Federal officers or employees to the committee.

(3) In the event vacancies shall occur, such vacancies shall be filled by the Secretary in the same manner as the original appointment within 90 days of the occurrence of such vacancy.

(4) Members of the committee established under subsection (a) of this section shall serve without pay, but shall be reimbursed at a rate equal to the daily rate for GS-18 of the General Schedule for each day (including travel time) for which the member is actually engaged in committee business. Each member shall receive travel expenses, including per diem in lieu of subsistence, in accordance with sections 5702 and 5703 of title 5 [United States Code].

25 U.S.C. 3006(c), Committee responsibilities

(c) The committee established under subsection a) of this section shall be responsible for—

(1) designating one of the members of the committee as chairman;

(2) monitoring the inventory and identification process conducted under sections 5 and 6 of this Act [25 U.S.C. 3003 and 3004] to ensure a fair, objective consideration and assessment of all available relevant information and evidence;

(3) upon the request of any affected party, reviewing and making findings related to—

(A) the identity or cultural affiliation of cultural items, or

(B) the return of such items;

(4) facilitating the resolution of any disputes among Indian tribes, Native Hawaiian organizations, or lineal descendants and Federal agencies or museums relating to the return of such items including convening the parties to the dispute if deemed desirable;

(5) compiling an inventory of culturally unidentifiable human remains that are in the possession or control of each Federal agency and museum and recommending specific actions for developing a process for disposition of such remains;

(6) consulting with Indian tribes and Native Hawaiian organizations and museums on matters within the scope of the work of the committee affecting such tribes or organizations;

(7) consulting with the Secretary in the development of regulations to carry out this Act;

(8) performing such other related functions as the Secretary may assign to the committee; and

(9) making recommendations, if appropriate, regarding future care of cultural items which are to be repatriated.

25 U.S.C. 3006(d), Admissibility of records

(d) Any records and findings made by the review committee pursuant to this Act relating to the identity or cultural affiliation of any cultural items and the return of such items may be admissible in any action brought under section 15 of this Act [25 U.S.C. 3013].

25 U.S.C. 3006(e), Recommendations and report

(e) The committee shall make the recommendations under paragraph (c)(5) of this section in consultation with Indian tribes and Native Hawaiian organizations and appropriate scientific and museum groups.

25 U.S.C. 3006(f), Committee access

(f) The Secretary shall ensure that the committee established under subsection (a) of this section and the members of the committee have reasonable access to Native American cultural items under review and to associated scientific and historical documents.

25 U.S.C. 3006(g), Duties of the Secretary, regulations, and administrative support

(g) The Secretary shall—

(1) establish such rules and regulations for the committee as may be necessary, and

(2) provide reasonable administrative and staff support necessary for the deliberations of the committee.

25 U.S.C. 3006(h), Annual report to Congress

(h) The committee established under subsection (a) of this section shall submit an annual report to the Congress on the progress made, and any barriers encountered, in implementing this section during the previous year.

25 U.S.C. 3006(i), Committee termination

(i) The committee established under subsection (a) of this section shall terminate at the end of the 120-day period beginning on the day the Secretary certifies, in a report submitted to Congress, that the work of the committee has been completed.

25 U.S.C. 3007, Penalty assessment, museums

Section 9

25 U.S.C. 3007(a), Penalty

(a) Any museum that fails to comply with the requirements of this Act may be assessed a civil penalty by the Secretary of the Interior pursuant to procedures established by the Secretary through regulation. A penalty assessed under this subsection shall be determined on the record after opportunity for an agency hearing. Each violation under this subsection shall be a separate offense.

25 U.S.C. 3007(b), Amount of penalty

(b) The amount of a penalty assessed under subsection (a) of this section shall be determined under regulations promulgated pursuant to this Act, taking into account, in addition to other factors—

(1) the archaeological, historical, or commercial value of the item involved;

(2) the damages suffered, both economic and noneconomic, by an aggrieved party, and

(3) the number of violations that have occurred.

25 U.S.C. 3007(c), Legal actions to recover penalties

(c) If any museum fails to pay an assessment of a civil penalty pursuant to a final order of the Secretary that has been issued under subsection (a) of this section and not appealed or after a final judgment has been rendered on appeal of such order, the Attorney General may institute a civil action in an appropriate district court of the United States to collect the penalty. In such action, the validity and amount of such penalty shall not be subject to review.

25 U.S.C. 3007(d), Authority to issue subpoenas

(d) In hearings held pursuant to subsection (a) of this section, subpoenas may be issued for the attendance and testimony of witnesses and the production of relevant papers, books, and documents. Witnesses so summoned shall be paid the same fees and mileage that are paid to witnesses in the courts of the United States.

25 U.S.C. 3008, Grants

Section 10

25 U.S.C. 3008(a), Grants to Indian tribes and Native Hawaiian organizations

(a) The Secretary is authorized to make grants to Indian tribes and Native Hawaiian organizations for the purpose of assisting such tribes and organizations in the repatriation of Native American cultural items.

25 U.S.C. 3008(b), Grants to museums

(b) The Secretary is authorized to make grants to museums for the purpose of assisting the museums in conducting the inventories and identification required under sections 5 and 6 of this Act [25 U.S.C. 3003 and 3004].

25 U.S.C. 3009, Limitations on applying the Act

Section 11

Nothing in this Act shall be construed to—

(1) limit the authority of any Federal agency or museum to—

(A) return or repatriate Native American cultural items to Indian tribes, Native Hawaiian organizations, or individuals, and

(B) enter into any other agreement with the consent of the culturally affiliated tribe or organization as to the disposition of, or control over, items covered by this Act;

(2) delay actions on repatriation requests that are pending on November 16, 1990;

(3) deny or otherwise affect access to any court;

(4) limit any procedural or substantive right which may otherwise be secured to individuals or Indian tribes or Native Hawaiian organizations; or

(5) limit the application of any State or Federal law pertaining to theft or stolen property.

25 U.S.C. 3010, Special relationship between the Federal Government and Indian tribes and Native Hawaiian organizations

Section 12

This Act reflects the unique relationship between the Federal Government and Indian tribes and Native Hawaiian organizations and should not be construed to establish a precedent with respect to any other individual, organization or foreign government.

25 U.S.C. 3011, Regulations

Section 13

The Secretary shall promulgate regulations to carry out this Act within 12 months of November 16, 1990.

25 U.S.C. 3012, Authorization of appropriations

Section 14

There is authorized to be appropriated such sums as may be necessary to carry out this Act.

25 U.S.C. 3013, Judicial jurisdiction and enforcement

Section 15

The United States district courts shall have jurisdiction over any action brought by any person alleging a violation of this Act and shall have the authority to issue such orders as may be necessary to enforce the provisions of this Act.

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recommendation from a designated areawide agency transmitted by a single point of contact, in cases in which the review, coordination, and communication with the Department have been delegated.

(b) The Secretary uses the procedures in § 9.10 if a state process provides a state process recommendation to the Department through a single point of contact.

§ 9.12 How may a state simplify, consolidate, or substitute federally required state plans?

(a) As used in this section:

(1) *Simplify* means that a state may develop its own format, choose its own submission date, and select the planning period for a state plan.

(2) *Consolidate* means that a state may meet statutory and regulatory requirements by combining two or more plans into one document and that the state can select the format, submission date, and planning period for the consolidated plan.

(3) *Substitute* means that a state may use a plan or other document that it has developed for its own purposes to meet Federal requirements.

(b) If not inconsistent with law, a state may decide to try to simplify, consolidate, or substitute Federally required state plans without prior approval by the Secretary.

(c) The Secretary reviews each state plan that a state has simplified, consolidated, or substituted and accepts the plan only if its contents meet Federal requirements.

§ 9.13 May the Secretary waive any provision of these regulations?

In an emergency, the Secretary may waive any provision of these regulations.

PART 10—NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION REGULATIONS

Subpart A—Introduction

Sec.

10.1 Purpose, applicability, and information collection.
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AUTHORITY: 16 U.S.C. 470dd; 25 U.S.C. 9, 3001 *et seq.*

SOURCE: 60 FR 62158, Dec. 4, 1995, unless otherwise noted.

Subpart A—Introduction

§ 10.1 Purpose, applicability, and information collection.

(a) *Purpose.* These regulations carry out provisions of the Native American Graves Protection and Repatriation Act of 1990 (Pub.L. 101–601; 25 U.S.C. 3001–3013;104 Stat. 3048–3058). These regulations develop a systematic process for determining the rights of lineal descendants and Indian tribes and Native Hawaiian organizations to certain Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony with which they are affiliated.

(b) *Applicability.* (1) These regulations pertain to the identification and appropriate disposition of human remains,

funerary objects, sacred objects, or objects of cultural patrimony that are:

(i) In Federal possession or control; or

(ii) In the possession or control of any institution or State or local government receiving Federal funds; or

(iii) Excavated intentionally or discovered inadvertently on Federal or tribal lands.

(2) These regulations apply to human remains, funerary objects, sacred objects, or objects of cultural patrimony which are indigenous to Alaska, Hawaii, and the continental United States, but not to territories of the United States.

(3) Throughout this part are decision points which determine how this part applies in particular circumstances, e.g., a decision as to whether a museum ''controls'' human remains and cultural objects within the meaning of the regulations, or a decision as to whether an object is a ''human remain,'' ''funerary object,'' ''sacred object,'' or ''object of cultural patrimony'' within the meaning of the regulations. Any final determination making the Act or this part inapplicable is subject to review under section 15 of the Act. With respect to Federal agencies, the final denial of a request of a lineal descendant, Indian tribe, or Native Hawaiian organization for the repatriation or disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony brought under, and in compliance with, the Act and this part constitutes a final agency action under the Administrative Procedure Act (5 U.S.C. 704).

(c) The information collection requirements contained in this part have been approved by the Office of Management and Budget under 44 U.S.C. 3501 *et seq*. and assigned control number 1024–0144. A Federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41293, Aug. 1, 1997; 75 FR 12402, Mar.15, 2010]

§ 10.2 Definitions.

In addition to the term *Act*, which means the Native American Graves Protection and Repatriation Act as described above, definitions used in these regulations are grouped in seven classes: Parties required to comply with these regulations; Parties with standing to make claims under these regulations; Parties responsible for implementing these regulations; Objects covered by these regulations; Cultural affiliation; Types of land covered by these regulations; and Procedures required by these regulations.

(a) *Who must comply with these regulations?* (1) *Federal agency* means any department, agency, or instrumentality of the United States. Such term does not include the Smithsonian Institution as specified in section 2 (4) of the Act.

(2) *Federal agency official* means any individual authorized by delegation of authority within a Federal agency to perform the duties relating to these regulations.

(3) *Museum* means any institution or State or local government agency (including any institution of higher learning) that has possession of, or control over, human remains, funerary objects, sacred objects, or objects of cultural patrimony and receives Federal funds.

(i) The term ''*possession*'' means having physical custody of human remains, funerary objects, sacred objects, or objects of cultural patrimony with a sufficient legal interest to lawfully treat the objects as part of its collection for purposes of these regulations. Generally, a museum or Federal agency would not be considered to have possession of human remains, funerary objects, sacred objects, or objects of cultural patrimony on loan from another individual, museum, or Federal agency.

(ii) The term ''*control*'' means having a legal interest in human remains, funerary objects, sacred objects, or objects of cultural patrimony sufficient to lawfully permit the museum or Federal agency to treat the objects as part of its collection for purposes of these regulations whether or not the human remains, funerary objects, sacred objects or objects of cultural patrimony are in the physical custody of the museum or Federal agency. Generally, a museum or Federal agency that has

loaned human remains, funerary objects, sacred objects, or objects of cultural patrimony to another individual, museum, or Federal agency is considered to retain control of those human remains, funerary objects, sacred objects, or objects of cultural patrimony for purposes of these regulations.

(iii) The phrase ''*receives Federal funds*'' means the receipt of funds by a museum after November 16, 1990, from a Federal agency through any grant, loan, contract (other than a procurement contract), or other arrangement by which a Federal agency makes or made available to a museum aid in the form of funds. Federal funds provided for any purpose that are received by a larger entity of which the museum is a part are considered Federal funds for the purposes of these regulations. For example, if a museum is a part of a State or local government or a private university and the State or local government or private university receives Federal funds for any purpose, the museum is considered to receive Federal funds for the purpose of these regulations.

(4) *Museum official* means the individual within a museum designated as being responsible for matters relating to these regulations.

(5) *Person* means an individual, partnership, corporation, trust, institution, association, or any other private entity, or, any official, employee, agent, department, or instrumentality of the United States, or of any Indian tribe or Native Hawaiian organization, or of any State or political subdivision thereof that discovers or discovered human remains, funerary objects, sacred objects or objects of cultural patrimony on Federal or tribal lands after November 16, 1990.

(b) *Who has standing to make a claim under these regulations?* (1) *Lineal descendant* means an individual tracing his or her ancestry directly and without interruption by means of the traditional kinship system of the appropriate Indian tribe or Native Hawaiian organization or by the common law system of descendance to a known Native American individual whose remains, funerary objects, or sacred objects are being claimed under these regulations.

(2) [Reserved]

(3)(i) *Native Hawaiian organization* means any organization that:

(A) Serves and represents the interests of Native Hawaiians;

(B) Has as a primary and stated purpose the provision of services to Native Hawaiians; and

(C) Has expertise in Native Hawaiian affairs.

(ii) The term *Native Hawaiian* means any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii. Such organizations must include the Office of Hawaiian Affairs and *Hui Mālama I NāKūpuna 'O Hawai'i Nei*.

(4) *Indian tribe official* means the principal leader of an Indian tribe or Native Hawaiian organization or the individual officially designated by the governing body of an Indian tribe or Native Hawaiian organization or as otherwise provided by tribal code, policy, or established procedure as responsible for matters relating to these regulations.

(c) *Who is responsible for carrying out these regulations?* (1) *Secretary* means the Secretary of the Interior.

(2) *Review Committee* means the advisory committee established pursuant to section 8 of the Act.

(3) *Manager, National NAGPRA Program* means the official of the Department of the Interior designated by the Secretary as responsible for administration of matters relating to this part. Communications to the Manager, National NAGPRA Program, should be addressed to: Manager, National NAGPRA Program, National Park Service (2253), 1849 C Street NW., Washington, DC 20240.

(d) *What objects are covered by these regulations?* The Act covers four types of Native American objects. The term *Native American* means of, or relating to, a tribe, people, or culture indigenous to the United States, including Alaska and Hawaii.

(1) *Human remains* means the physical remains of the body of a person of Native American ancestry. The term does

not include remains or portions of remains that may reasonably be determined to have been freely given or naturally shed by the individual from whose body they were obtained, such as hair made into ropes or nets. For the purposes of determining cultural affiliation, human remains incorporated into a funerary object, sacred object, or object of cultural patrimony, as defined below, must be considered as part of that item.

(2) *Funerary objects* means items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later with or near individual human remains. Funerary objects must be identified by a preponderance of the evidence as having been removed from a specific burial site of an individual affiliated with a particular Indian tribe or Native Hawaiian organization or as being related to specific individuals or families or to known human remains. The term *burial site* means any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which, as part of the death rite or ceremony of a culture, individual human remains were deposited, and includes rock cairns or pyres which do not fall within the ordinary definition of gravesite. For purposes of completing the summary requirements in § 10.8 and the inventory requirements of § 10.9:

(i) *Associated funerary objects* means those funerary objects for which the human remains with which they were placed intentionally are also in the possession or control of a museum or Federal agency. Associated funerary objects also means those funerary objects that were made exclusively for burial purposes or to contain human remains.

(ii) *Unassociated funerary objects* means those funerary objects for which the human remains with which they were placed intentionally are not in the possession or control of a museum or Federal agency. Objects that were displayed with individual human remains as part of a death rite or ceremony of a culture and subsequently returned or distributed according to traditional custom to living descendants or other individuals are not considered unassociated funerary objects.

(3) *Sacred objects* means items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. While many items, from ancient pottery sherds to arrowheads, might be imbued with sacredness in the eyes of an individual, these regulations are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and which have religious significance or function in the continued observance or renewal of such ceremony. The term *traditional* religious leader means a person who is recognized by members of an Indian tribe or Native Hawaiian organization as:

(i) Being responsible for performing cultural duties relating to the ceremonial or religious traditions of that Indian tribe or Native Hawaiian organization, or

(ii) Exercising a leadership role in an Indian tribe or Native Hawaiian organization based on the tribe or organization's cultural, ceremonial, or religious practices.

(4) *Objects of cultural patrimony* means items having ongoing historical, traditional, or cultural importance central to the Indian tribe or Native Hawaiian organization itself, rather than property owned by an individual tribal or organization member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by any individual tribal or organization member. Such objects must have been considered inalienable by the culturally affiliated Indian tribe or Native Hawaiian organization at the time the object was separated from the group. Objects of cultural patrimony include items such as Zuni War Gods, the Confederacy Wampum Belts of the Iroquois, and other objects of similar character and significance to the Indian tribe or Native Hawaiian organization as a whole.

(e)(1) What is *cultural affiliation*? Cultural affiliation means that there is a relationship of shared group identity

that can be reasonably traced historically or prehistorically between members of a present-day Indian tribe or Native Hawaiian organization and an identifiable earlier group. Cultural affiliation is established when the preponderance of the evidence—based on geographical, kinship, biological, archeological, anthropological, linguistic, folklore, oral tradition, historical evidence, or other information or expert opinion—reasonably leads to such a conclusion.

(2) What does *culturally unidentifiable* mean? Culturally unidentifiable refers to human remains and associated funerary objects in museum or Federal agency collections for which no lineal descendant or culturally affiliated Indian tribe or Native Hawaiian organization has been identified through the inventory process.

(f) *What types of lands do the excavation and discovery provisions of these regulations apply to?* (1) *Federal lands* means any land other than tribal lands that are controlled or owned by the United States Government, including lands selected by but not yet conveyed to Alaska Native Corporations and groups organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.). United States ''control,'' as used in this definition, refers to those lands not owned by the United States but in which the United States has a legal interest sufficient to permit it to apply these regulations without abrogating the otherwise existing legal rights of a person.

(2) *Tribal lands* means all lands which:

(i) Are within the exterior boundaries of any Indian reservation including, but not limited to, allotments held in trust or subject to a restriction on alienation by the United States; or

(ii) Comprise dependent Indian communities as recognized pursuant to 18 U.S.C. 1151; or

(iii) Are administered for the benefit of Native Hawaiians pursuant to the Hawaiian Homes Commission Act of 1920 and section 4 of the Hawaiian Statehood Admission Act (Pub.L. 86–3; 73 Stat. 6).

(iv) Actions authorized or required under these regulations will not apply to tribal lands to the extent that any action would result in a taking of property without compensation within the meaning of the Fifth Amendment of the United States Constitution.

(g) *What procedures are required by these regulations?* (1) *Summary* means the written description of collections that may contain unassociated funerary objects, sacred objects, and objects of cultural patrimony required by § 10.8 of these regulations.

(2) *Inventory* means the item-by-item description of human remains and associated funerary objects.

(3) *Intentional excavation* means the planned archeological removal of human remains, funerary objects, sacred objects, or objects of cultural patrimony found under or on the surface of Federal or tribal lands pursuant to section 3 (c) of the Act.

(4) *Inadvertent discovery* means the unanticipated encounter or detection of human remains, funerary objects, sacred objects, or objects of cultural patrimony found under or on the surface of Federal or tribal lands pursuant to section 3 (d) of the Act.

(5) *Disposition* means the transfer of control over Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony by a museum or Federal agency under this part. This part establishes disposition procedures for several different situations:

(i) Custody of human remains, funerary objects, sacred objects, and objects of cultural patrimony excavated intentionally from, or discovered inadvertently on, Federal or tribal lands after November 16, 1990, is established under § 10.6.

(ii) Repatriation of human remains, funerary objects, sacred objects, and objects of cultural patrimony in museum and Federal agency collections to a lineal descendant or culturally affiliated Indian tribe or Native Hawaiian organization is established under § 10.10.

(iii) Disposition of culturally unidentifiable human remains, with or without associated funerary objects, in museum or Federal agency collections is established under § 10.11.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41293, Aug. 1, 1997; 70 FR 57179, Sept. 30, 2005; 71 FR 16501, Apr. 3, 2006; 75 FR 12403, Mar. 15, 2010; 76 FR 39009, July 5, 2011]

Subpart B—Human Remains, Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony From Federal or Tribal Lands

§ 10.3 Intentional archaeological excavations.

(a) *General.* This section carries out section 3 (c) of the Act regarding the custody of human remains, funerary objects, sacred objects, or objects of cultural patrimony that are excavated intentionally from Federal or tribal lands after November 16, 1990.

(b) *Specific Requirements.* These regulations permit the intentional excavation of human remains, funerary objects, sacred objects, or objects of cultural patrimony from Federal or tribal lands only if:

(1) The objects are excavated or removed following the requirements of the Archaeological Resources Protection Act (ARPA) (16 U.S.C. 470aa et seq.) and its implementing regulations. Regarding private lands within the exterior boundaries of any Indian reservation, the Bureau of Indian Affairs (BIA) will serve as the issuing agency for any permits required under the Act. For BIA procedures for obtaining such permits, see 25 CFR part 262 or contact the Deputy Commissioner of Indian Affairs, Department of the Interior, Washington, DC 20240. Regarding lands administered for the benefit of Native Hawaiians pursuant to the Hawaiian Homes Commission Act, 1920, and section 4 of Pub. L. 86–3, the Department of Hawaiian Home Lands will serve as the issuing agency for any permits required under the Act, with the Hawaii State Historic Preservation Division of the Department of Land and Natural Resources acting in an advisory capacity for such issuance. Procedures and requirements for issuing permits will be consistent with those required by the ARPA and its implementing regulations;

(2) The objects are excavated after consultation with or, in the case of tribal lands, consent of, the appropriate Indian tribe or Native Hawaiian organization pursuant to § 10.5;

(3) The disposition of the objects is consistent with their custody as described in § 10.6; and

(4) Proof of the consultation or consent is shown to the Federal agency official or other agency official responsible for the issuance of the required permit.

(c) *Procedures.* (1) The Federal agency official must take reasonable steps to determine whether a planned activity may result in the excavation of human remains, funerary objects, sacred objects, or objects of cultural patrimony from Federal lands. Prior to issuing any approvals or permits for activities, the Federal agency official must notify in writing the Indian tribes or Native Hawaiian organizations that are likely to be culturally affiliated with any human remains, funerary objects, sacred objects, or objects of cultural patrimony that may be excavated. The Federal agency official must also notify any present-day Indian tribe which aboriginally occupied the area of the planned activity and any other Indian tribes or Native Hawaiian organizations that the Federal agency official reasonably believes are likely to have a cultural relationship to the human remains, funerary objects, sacred objects, or objects of cultural patrimony that are expected to be found. The notice must be in writing and describe the planned activity, its general location, the basis upon which it was determined that human remains, funerary objects, sacred objects, or objects of cultural patrimony may be excavated, and, the basis for determining likely custody pursuant to § 10.6. The notice must also propose a time and place for meetings or consultations to further consider the activity, the Federal agency's proposed treatment of any human remains, funerary objects, sacred objects, or objects of cultural patrimony that may be excavated, and the proposed disposition of any excavated human remains, funerary objects, sacred objects, or objects of cultural patrimony. Written notification should be followed up by telephone contact if there is no response in 15 days. Consultation must be conducted pursuant to § 10.5.

(2) Following consultation, the Federal agency official must complete a written plan of action (described in § 10.5(e)) and execute the actions called for in it.

(3) If the planned activity is also subject to review under section 106 of the National Historic Preservation Act (16 U.S.C. 470 *et seq.*), the Federal agency official should coordinate consultation and any subsequent agreement for compliance conducted under that Act with the requirements of § 10.3 (c)(2) and § 10.5. Compliance with these regulations does not relieve Federal agency officials of requirements to comply with section 106 of the National Historic Preservation Act (16 U.S.C. 470 *et seq.*).

(4) If an Indian tribe or Native Hawaiian organization receives notice of a planned activity or otherwise becomes aware of a planned activity that may result in the excavation of human remains, funerary objects, sacred objects, or objects of cultural patrimony on tribal lands, the Indian tribe or Native Hawaiian organization may take appropriate steps to:

(i) Ensure that the human remains, funerary objects, sacred objects, or objects of cultural patrimony are excavated or removed following § 10.3 (b), and

(ii) Make certain that the disposition of any human remains, funerary objects, sacred objects, or objects of cultural patrimony excavated intentionally or discovered inadvertently as a result of the planned activity are carried out following § 10.6.

§ 10.4 Inadvertent discoveries.

(a) *General.* This section carries out section 3 (d) of the Act regarding the custody of human remains, funerary objects, sacred objects, or objects of cultural patrimony that are discovered inadvertently on Federal or tribal lands after November 16, 1990.

(b) *Discovery.* Any person who knows or has reason to know that he or she has discovered inadvertently human remains, funerary objects, sacred objects, or objects of cultural patrimony on Federal or tribal lands after November 16, 1990, must provide immediate telephone notification of the inadvertent discovery, with written confirmation, to the responsible Federal agency official with respect to Federal lands, and, with respect to tribal lands, to the responsible Indian tribe official. The requirements of these regulations regarding inadvertent discoveries apply whether or not an inadvertent discovery is duly reported. If written confirmation is provided by certified mail, the return receipt constitutes evidence of the receipt of the written notification by the Federal agency official or Indian tribe official.

(c) *Ceasing activity.* If the inadvertent discovery occurred in connection with an on-going activity on Federal or tribal lands, the person, in addition to providing the notice described above, must stop the activity in the area of the inadvertent discovery and make a reasonable effort to protect the human remains, funerary objects, sacred objects, or objects of cultural patrimony discovered inadvertently.

(d) *Federal lands.* (1) As soon as possible, but no later than three (3) working days after receipt of the written confirmation of notification with respect to Federal lands described in § 10.4 (b), the responsible Federal agency official must:

(i) Certify receipt of the notification;

(ii) Take immediate steps, if necessary, to further secure and protect inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony, including, as appropriate, stabilization or covering;

(iii) Notify by telephone, with written confirmation, the Indian tribes or Native Hawaiian organizations likely to be culturally affiliated with the inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony, the Indian tribe or Native Hawaiian organization which aboriginally occupied the area, and any other Indian tribe or Native Hawaiian organization that is reasonably known to have a cultural relationship to the human remains, funerary objects, sacred objects, or objects of cultural patrimony. This notification must include pertinent information as to kinds of human remains, funerary objects, sacred objects, or objects of cultural patrimony discovered inadvertently, their condition, and the circumstances of their inadvertent discovery;

(iv) Initiate consultation on the inadvertent discovery pursuant to § 10.5;

(v) If the human remains, funerary objects, sacred objects, or objects of cultural patrimony must be excavated or removed, follow the requirements and procedures in § 10.3 (b) of these regulations; and

(vi) Ensure that disposition of all inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony is carried out following § 10.6.

(2) *Resumption of activity*. The activity that resulted in the inadvertent discovery may resume thirty (30) days after certification by the notified Federal agency of receipt of the written confirmation of notification of inadvertent discovery if the resumption of the activity is otherwise lawful. The activity may also resume, if otherwise lawful, at any time that a written, binding agreement is executed between the Federal agency and the affiliated Indian tribes or Native Hawaiian organizations that adopt a recovery plan for the excavation or removal of the human remains, funerary objects, sacred objects, or objects of cultural patrimony following § 10.3 (b)(1) of these regulations. The disposition of all human remains, funerary objects, sacred objects, or objects of cultural patrimony must be carried out following § 10.6.

(e) *Tribal lands*. (1) As soon as possible, but no later than three (3) working days after receipt of the written confirmation of notification with respect to Tribal lands described in § 10.4 (b), the responsible Indian tribe official may:

(i) Certify receipt of the notification;

(ii) Take immediate steps, if necessary, to further secure and protect inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony, including, as appropriate, stabilization or covering;

(iii) If the human remains, funerary objects, sacred objects, or objects of cultural patrimony must be excavated or removed, follow the requirements and procedures in § 10.3 (b) of these regulations; and

(iv) Ensure that disposition of all inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony is carried out following § 10.6.

(2) Resumption of Activity. The activity that resulted in the inadvertent discovery may resume if otherwise lawful after thirty (30) days of the certification of the receipt of notification by the Indian tribe or Native Hawaiian organization.

(f) *Federal agency officials*. Federal agency officials should coordinate their responsibilities under this section with their emergency discovery responsibilities under section 106 of the National Historical Preservation Act (16 U.S.C. 470 (f) *et seq*.), 36 CFR 800.11 or section 3 (a) of the Archeological and Historic Preservation Act (16 U.S.C. 469 (a-c)). Compliance with these regulations does not relieve Federal agency officials of the requirement to comply with section 106 of the National Historical Preservation Act (16 U.S.C. 470 (f) *et seq*.), 36 CFR 800.11 or section 3 (a) of the Archeological and Historic Preservation Act (16 U.S.C. 469 (a-c)).

(g) *Notification requirement in authorizations*. All Federal authorizations to carry out land use activities on Federal lands or tribal lands, including all leases and permits, must include a requirement for the holder of the authorization to notify the appropriate Federal or tribal official immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony pursuant to § 10.4 (b) of these regulations.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41293, Aug. 1, 1997]

§ 10.5 Consultation.

Consultation as part of the intentional excavation or inadvertent discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on Federal lands must be conducted in accordance with the following requirements.

(a) *Consulting parties*. Federal agency officials must consult with known lineal descendants and Indian tribe officials:

(1) From Indian tribes on whose aboriginal lands the planned activity will occur or where the inadvertent discovery has been made; and

(2) From Indian tribes and Native Hawaiian organizations that are, or are

likely to be, culturally affiliated with the human remains, funerary objects, sacred objects, or objects of cultural patrimony; and

(3) From Indian tribes and Native Hawaiian organizations that have a demonstrated cultural relationship with the human remains, funerary objects, sacred objects, or objects of cultural patrimony.

(b) *Initiation of consultation.* (1) Upon receiving notice of, or otherwise becoming aware of, an inadvertent discovery or planned activity that has resulted or may result in the intentional excavation or inadvertent discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on Federal lands, the responsible Federal agency official must, as part of the procedures described in §§10.3 and 10.4, take appropriate steps to identify the lineal descendant, Indian tribe, or Native Hawaiian organization entitled to custody of the human remains, funerary objects, sacred objects, or objects of cultural patrimony pursuant to §10.6 and §10.14. The Federal agency official shall notify in writing:

(i) Any known lineal descendants of the individual whose remains, funerary objects, sacred objects, or objects of cultural patrimony have been or are likely to be excavated intentionally or discovered inadvertently; and

(ii) The Indian tribes or Native Hawaiian organizations that are likely to be culturally affiliated with the human remains, funerary objects, sacred objects, or objects of cultural patrimony that have been or are likely to be excavated intentionally or discovered inadvertently; and

(iii) The Indian tribes which aboriginally occupied the area in which the human remains, funerary objects, sacred objects, or objects of cultural patrimony have been or are likely to be excavated intentionally or discovered inadvertently; and

(iv) The Indian tribes or Native Hawaiian organizations that have a demonstrated cultural relationship with the human remains, funerary objects, sacred objects, or objects of cultural patrimony that have been or are likely to be excavated intentionally or discovered inadvertently.

(2) The notice must propose a time and place for meetings or consultation to further consider the intentional excavation or inadvertent discovery, the Federal agency's proposed treatment of the human remains, funerary objects, sacred objects, or objects of cultural patrimony that may be excavated, and the proposed disposition of any intentionally excavated or inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony.

(3) The consultation must seek to identify traditional religious leaders who should also be consulted and seek to identify, where applicable, lineal descendants and Indian tribes or Native Hawaiian organizations affiliated with the human remains, funerary objects, sacred objects, or objects of cultural patrimony.

(c) *Provision of information.* During the consultation process, as appropriate, the Federal agency official must provide the following information in writing to the lineal descendants and the officials of Indian tribes or Native Hawaiian organizations that are or are likely to be affiliated with the human remains, funerary objects, sacred objects, or objects of cultural patrimony excavated intentionally or discovered inadvertently on Federal lands:

(1) A list of all lineal descendants and Indian tribes or Native Hawaiian organizations that are being, or have been, consulted regarding the particular human remains, funerary objects, sacred objects, or objects of cultural patrimony;

(2) An indication that additional documentation used to identify affiliation will be supplied upon request.

(d) *Requests for information.* During the consultation process, Federal agency officials must request, as appropriate, the following information from Indian tribes or Native Hawaiian organizations that are, or are likely to be, affiliated pursuant to §10.6 (a) with intentionally excavated or inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony:

(1) Name and address of the Indian tribe official to act as representative in consultations related to particular

human remains, funerary objects, sacred objects, or objects of cultural patrimony;

(2) Names and appropriate methods to contact lineal descendants who should be contacted to participate in the consultation process;

(3) Recommendations on how the consultation process should be conducted; and

(4) Kinds of cultural items that the Indian tribe or Native Hawaiian organization considers likely to be unassociated funerary objects, sacred objects, or objects of cultural patrimony.

(e) *Written plan of action*. Following consultation, the Federal agency official must prepare, approve, and sign a written plan of action. A copy of this plan of action must be provided to the lineal descendants, Indian tribes and Native Hawaiian organizations involved. Lineal descendants and Indian tribe official(s) may sign the written plan of action as appropriate. At a minimum, the plan of action must comply with §10.3 (b)(1) and document the following:

(1) The kinds of objects to be considered as cultural items as defined in §10.2 (b);

(2) The specific information used to determine custody pursuant to §10.6;

(3) The planned treatment, care, and handling of human remains, funerary objects, sacred objects, or objects of cultural patrimony recovered;

(4) The planned archeological recording of the human remains, funerary objects, sacred objects, or objects of cultural patrimony recovered;

(5) The kinds of analysis planned for each kind of object;

(6) Any steps to be followed to contact Indian tribe officials at the time of intentional excavation or inadvertent discovery of specific human remains, funerary objects, sacred objects, or objects of cultural patrimony;

(7) The kind of traditional treatment, if any, to be afforded the human remains, funerary objects, sacred objects, or objects of cultural patrimony by members of the Indian tribe or Native Hawaiian organization;

(8) The nature of reports to be prepared; and

(9) The planned disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony following §10.6.

(f) *Comprehensive agreements*. Whenever possible, Federal Agencies should enter into comprehensive agreements with Indian tribes or Native Hawaiian organizations that are affiliated with human remains, funerary objects, sacred objects, or objects of cultural patrimony and have claimed, or are likely to claim, those human remains, funerary objects, sacred objects, or objects of cultural patrimony excavated intentionally or discovered inadvertently on Federal lands. These agreements should address all Federal agency land management activities that could result in the intentional excavation or inadvertent discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony. Consultation should lead to the establishment of a process for effectively carrying out the requirements of these regulations regarding standard consultation procedures, the determination of custody consistent with procedures in this section and §10.6, and the treatment and disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony. The signed agreements, or the correspondence related to the effort to reach agreements, must constitute proof of consultation as required by these regulations.

(g) *Traditional religious leaders*. The Federal agency official must be cognizant that Indian tribe officials may need to confer with traditional religious leaders prior to making recommendations. Indian tribe officials are under no obligation to reveal the identity of traditional religious leaders.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41293, Aug. 1, 1997]

§10.6 Custody.

(a) *Priority of custody*. This section carries out section 3 (a) of the Act, subject to the limitations of §10.15, regarding the custody of human remains, funerary objects, sacred objects, or objects of cultural patrimony excavated intentionally or discovered inadvertently in Federal or tribal lands after

November 16, 1990. For the purposes of this section, custody means ownership or control of human remains, funerary objects, sacred objects, or objects of cultural patrimony excavated intentionally or discovered inadvertently in Federal or tribal lands after November 16, 1990. Custody of these human remains, funerary objects, sacred objects, or objects of cultural patrimony is, with priority given in the order listed:

(1) In the case of human remains and associated funerary objects, in the lineal descendant of the deceased individual as determined pursuant to § 10.14 (b);

(2) In cases where a lineal descendant cannot be ascertained or no claim is made, and with respect to unassociated funerary objects, sacred objects, and objects of cultural patrimony:

(i) In the Indian tribe on whose tribal land the human remains, funerary objects, sacred objects, or objects of cultural patrimony were excavated intentionally or discovered inadvertently;

(ii) In the Indian tribe or Native Hawaiian organization that has the closest cultural affiliation with the human remains, funerary objects, sacred objects, or objects of cultural patrimony as determined pursuant to § 10.14 (c); or

(iii) In circumstances in which the cultural affiliation of the human remains, funerary objects, sacred objects, or objects of cultural patrimony cannot be ascertained and the objects were excavated intentionally or discovered inadvertently on Federal land that is recognized by a final judgment of the Indian Claims Commission or the United States Court of Claims as the aboriginal land of an Indian tribe:

(A) In the Indian tribe aboriginally occupying the Federal land on which the human remains, funerary objects, sacred objects, or objects of cultural patrimony were excavated intentionally or discovered inadvertently, or

(B) If it can be shown by a preponderance of the evidence that a different Indian tribe or Native Hawaiian organization has a stronger cultural relationship with the human remains, funerary objects, sacred objects, or objects of cultural patrimony, in the Indian tribe or Native Hawaiian organization that has the strongest demonstrated relationship with the objects.

(b) Custody of human remains, funerary objects, sacred objects, or objects of cultural patrimony and other provisions of the Act apply to all intentional excavations and inadvertent discoveries made after November 16, 1990, including those made before the effective date of these regulations.

(c) *Final notice, claims and disposition with respect to Federal lands.* Upon determination of the lineal descendant, Indian tribe, or Native Hawaiian organization that under these regulations appears to be entitled to custody of particular human remains, funerary objects, sacred objects, or objects of cultural patrimony excavated intentionally or discovered inadvertently on Federal lands, the responsible Federal agency official must, subject to the notice required herein and the limitations of § 10.15, transfer custody of the objects to the lineal descendant, Indian tribe, or Native Hawaiian organization following appropriate procedures, which must respect traditional customs and practices of the affiliated Indian tribes or Native Hawaiian organizations in each instance. Prior to any such disposition by a Federal agency official, the Federal agency official must publish general notices of the proposed disposition in a newspaper of general circulation in the area in which the human remains, funerary objects, sacred objects, or objects of cultural patrimony were excavated intentionally or discovered inadvertently and, if applicable, in a newspaper of general circulation in the area(s) in which affiliated Indian tribes or Native Hawaiian organizations members now reside. The notice must provide information as to the nature and affiliation of the human remains, funerary objects, sacred objects, or objects of cultural patrimony and solicit further claims to custody. The notice must be published at least two (2) times at least a week apart, and the transfer must not take place until at least thirty (30) days after the publication of the second notice to allow time for any additional claimants to come forward. If additional claimants do come forward and the Federal agency official cannot clearly determine which claimant is

entitled to custody, the Federal agency must not transfer custody of the objects until such time as the proper recipient is determined pursuant to these regulations. The Federal agency official must send a copy of the notice and information on when and in what newspaper(s) the notice was published to the Manager, National NAGPRA Program.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41293, Aug. 1, 1997; 71 FR 16501, Apr. 3, 2006]

§ 10.7 Disposition of unclaimed human remains, funerary objects, sacred objects, or objects of cultural patrimony. [Reserved]

Subpart C—Human Remains, Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony in Museums and Federal Collections

§ 10.8 Summaries.

(a) *General.* This section carries out section 6 of the Act. Under section 6 of the Act, each museum or Federal agency that has possession or control over collections which may contain unassociated funerary objects, sacred objects, or objects of cultural patrimony must complete a summary of these collections based upon available information held by the museum or Federal agency. The purpose of the summary is to provide information about the collections to lineal descendants and culturally affiliated Indian tribes or Native Hawaiian organizations that may wish to request repatriation of such objects. The summary serves in lieu of an object-by-object inventory of these collections, although, if an inventory is available, it may be substituted. Federal agencies are responsible for ensuring that these requirements are met for all collections from their lands or generated by their actions whether the collections are held by the Federal agency or by a non-Federal institution.

(b) *Contents of summaries.* For each collection or portion of a collection, the summary must include: an estimate of the number of objects in the collection or portion of the collection; a description of the kinds of objects included; reference to the means, date(s), and location(s) in which the collection or portion of the collection was acquired, where readily ascertainable; and information relevant to identifying lineal descendants, if available, and cultural affiliation.

(c) *Completion.* Summaries must be completed not later than November 16, 1993.

(d) *Consultation.* (1) Consulting parties. Museum and Federal agency officials must consult with Indian tribe officials and traditional religious leaders:

(i) From whose tribal lands unassociated funerary objects, sacred objects, or objects of cultural patrimony originated;

(ii) That are, or are likely to be, culturally affiliated with unassociated funerary objects, sacred objects, or objects of cultural patrimony; and

(iii) From whose aboriginal lands unassociated funerary objects, sacred objects, or objects of cultural patrimony originated.

(2) Initiation of consultation. Museum and Federal agency officials must begin summary consultation no later than the completion of the summary process. Consultation may be initiated with a letter, but should be followed up by telephone or face-to-face dialogue with the appropriate Indian tribe official.

(3) Provision of information. During summary consultation, museum and Federal agency officials must provide copies of the summary to lineal descendants, when known, and to officials and traditional religious leaders representing Indian tribes or Native Hawaiian organizations that are, or are likely to be, culturally affiliated with the cultural items. A copy of the summary must also be provided to the Manager, National NAGPRA Program. Upon request by lineal descendants or Indian tribe officials, museum and Federal agency officials must provide lineal descendants, Indian tribe officials and traditional religious leaders with access to records, catalogues, relevant studies, or other pertinent data for the limited purposes of determining the geographic origin, cultural affiliation, and basic facts surrounding acquisition and accession of objects covered by the

summary. Access to this information may be requested at any time and must be provided in a reasonable manner to be agreed upon by all parties. The Review committee also must be provided access to such materials.

(4) Requests for information. During the summary consultation, museum and Federal agency officials must request, as appropriate, the following information from Indian tribes and Native Hawaiian organizations that are, or are likely to be, culturally affiliated with their collections:

(i) Name and address of the Indian tribe official to act as representative in consultations related to particular objects;

(ii) Recommendations on how the consultation process should be conducted, including:

(A) Names and appropriate methods to contact any lineal descendants, if known, of individuals whose unassociated funerary objects or sacred objects are included in the summary;

(B) Names and appropriate methods to contact any traditional religious leaders that the Indian tribe or Native Hawaiian organization thinks should be consulted regarding the collections; and

(iii) Kinds of cultural items that the Indian tribe or Native Hawaiian organization considers to be funerary objects, sacred objects, or objects of cultural patrimony.

(e) Museum and Federal agency officials must document the following information regarding unassociated funerary objects, sacred objects, and objects of cultural patrimony in their collections and must use this documentation in determining the individuals, Indian tribes, and Native Hawaiian organizations with which they are affiliated:

(1) Accession and catalogue entries;

(2) Information related to the acquisition of unassociated funerary object, sacred object, or object of cultural patrimony, including:

(i) The name of the person or organization from whom the object was obtained, if known;

(ii) The date of acquisition;

(iii) The place each object was acquired, i.e., name or number of site, county, State, and Federal agency administrative unit, if applicable; and

(iv) The means of acquisition, i.e., gift, purchase, or excavation;

(3) A description of each unassociated funerary object, sacred object, or object of cultural patrimony, including dimensions, materials, and photographic documentation, if appropriate, and the antiquity of such objects, if known;

(4) A summary of the evidence used to determine the cultural affiliation of the unassociated funerary objects, sacred objects, or objects of cultural patrimony pursuant to § 10.14 of these regulations.

(f) *Notification.* Repatriation of unassociated funerary objects, sacred objects, or objects of cultural patrimony to lineal descendants, culturally affiliated Indian tribes, or Native Hawaiian organizations as determined pursuant to § 10.10 (a), must not proceed prior to submission of a notice of intent to repatriate to the Manager, National NAGPRA Program, and publication of the notice of intent to repatriate in the FEDERAL REGISTER. The notice of intent to repatriate must describe the unassociated funerary objects, sacred objects, or objects of cultural patrimony being claimed in sufficient detail so as to enable other individuals, Indian tribes or Native Hawaiian organizations to determine their interest in the claimed objects. It must include information that identifies each claimed unassociated funerary object, sacred object, or object of cultural patrimony and the circumstances surrounding its acquisition, and describes the objects that are clearly identifiable as to cultural affiliation. It must also describe the objects that are not clearly identifiable as being culturally affiliated with a particular Indian tribe or Native Hawaiian organization, but which, given the totality of circumstances surrounding acquisition of the objects, are likely to be culturally affiliated with a particular Indian tribe or Native Hawaiian organization. The Manager, National NAGPRA Program must publish the notice of intent to repatriate in the FEDERAL REGISTER. Repatriation may not occur until at least thirty (30) days after publication of the

notice of intent to repatriate in the FEDERAL REGISTER.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41293, Aug. 1, 1997; 71 FR 16501, Apr. 3, 2006]

§ 10.9 Inventories.

(a) *General.* This section carries out section 5 of the Act. Under section 5 of the Act, each museum or Federal agency that has possession or control over holdings or collections of human remains and associated funerary objects must compile an inventory of such objects, and, to the fullest extent possible based on information possessed by the museum or Federal agency, must identify the geographical and cultural affiliation of each item. The purpose of the inventory is to facilitate repatriation by providing clear descriptions of human remains and associated funerary objects and establishing the cultural affiliation between these objects and present-day Indian tribes and Native Hawaiian organizations. Museums and Federal agencies are encouraged to produce inventories first on those portions of their collections for which information is readily available or about which Indian tribes or Native Hawaiian organizations have expressed special interest. Early focus on these parts of collections will result in determinations that may serve as models for other inventories. Federal agencies must ensure that these requirements are met for all collections from their lands or generated by their actions whether the collections are held by the Federal agency or by a non-Federal institution.

(b) *Consultation*—(1) *Consulting parties.* Museum and Federal agency officials must consult with:

(i) Lineal descendants of individuals whose remains and associated funerary objects are likely to be subject to the inventory provisions of these regulations; and

(ii) Indian tribe officials and traditional religious leaders:

(A) From whose tribal lands the human remains and associated funerary objects originated;

(B) That are, or are likely to be, culturally affiliated with human remains and associated funerary objects; and

(C) From whose aboriginal lands the human remains and associated funerary objects originated.

(2) *Initiation of consultation.* Museum and Federal agency officials must begin inventory consultation as early as possible, no later in the inventory process than the time at which investigation into the cultural affiliation of human remains and associated funerary objects is being conducted. Consultation may be initiated with a letter, but should be followed up by telephone or face-to-face dialogue.

(3) *Provision of information.* During inventory consultation, museums and Federal agency officials must provide the following information in writing to lineal descendants, when known, and to officials and traditional religious leaders representing Indian tribes or Native Hawaiian organizations that are, or are likely to be, culturally affiliated with the human remains and associated funerary objects.

(i) A list of all Indian tribes and Native Hawaiian organizations that are, or have been, consulted regarding the particular human remains and associated funerary objects;

(ii) A general description of the conduct of the inventory;

(iii) The projected time frame for conducting the inventory; and

(iv) An indication that additional documentation used to identify cultural affiliation will be supplied upon request.

(4) *Requests for information.* During the inventory consultation, museum and Federal agency officials must request, as appropriate, the following information from Indian tribes and Native Hawaiian organizations that are, or are likely to be, culturally affiliated with their collections:

(i) Name and address of the Indian tribe official to act as representative in consultations related to particular human remains and associated funerary objects;

(ii) Recommendations on how the consultation process should be conducted, including:

(A) Names and appropriate methods to contact any lineal descendants of individuals whose remains and associated funerary objects are or are likely to be included in the inventory; and

(B) Names and appropriate methods to contact traditional religious leaders who should be consulted regarding the human remains and associated funerary objects.

(iii) Kinds of objects that the Indian tribe or Native Hawaiian organization reasonably believes to have been made exclusively for burial purposes or to contain human remains of their ancestors.

(c) *Required information.* The following documentation must be included, if available, for all inventories completed by museum or Federal agency officials:

(1) Accession and catalogue entries, including the accession/catalogue entries of human remains with which funerary objects were associated;

(2) Information related to the acquisition of each object, including:

(i) The name of the person or organization from whom the object was obtained, if known;

(ii) The date of acquisition,

(iii) The place each object was acquired, i.e., name or number of site, county, State, and Federal agency administrative unit, if applicable; and

(iv) The means of acquisition, i.e., gift, purchase, or excavation;

(3) A description of each set of human remains or associated funerary object, including dimensions, materials, and, if appropriate, photographic documentation, and the antiquity of such human remains or associated funerary objects, if known;

(4) A summary of the evidence, including the results of consultation, used to determine the cultural affiliation of the human remains and associated funerary objects pursuant to § 10.14 of these regulations.

(d) *Documents.* Two separate documents comprise the inventory:

(1) A listing of all human remains and associated funerary objects that are identified as being culturally affiliated with one or more present-day Indian tribes or Native Hawaiian organizations. The list must indicate for each item or set of items whether cultural affiliation is clearly determined or likely based upon the preponderance of the evidence; and

(2) A listing of all culturally unidentifiable human remains and associated funerary objects for which no culturally affiliated present-day Indian tribe or Native Hawaiian organization can be determined.

(e) *Notification.* (1) If the inventory results in the identification or likely identification of the cultural affiliation of any particular human remains or associated funerary objects with one or more Indian tribes or Native Hawaiian organizations, the museum or Federal agency, not later than six (6) months after completion of the inventory, must send such Indian tribes or Native Hawaiian organizations the inventory of culturally affiliated human remains and associated funerary objects, including all information required under § 10.9 (c), and a notice of inventory completion that summarizes the results of the inventory.

(2) The notice of inventory completion must:

(i) Summarize the contents of the inventory in sufficient detail so as to enable the recipients to determine their interest in claiming the inventoried items;

(ii) Identify each particular set of human remains or each associated funerary object and the circumstances surrounding its acquisition;

(iii) Describe the human remains or associated funerary objects that are clearly culturally affiliated with an Indian tribe or Native Hawaiian organization and identify the Indian tribe or Native Hawaiian organization;

(iv) Describe the human remains or associated funerary objects that are not clearly identifiable as culturally affiliated with an Indian tribe or Native Hawaiian organization, but that are likely to be culturally affiliated with a particular Indian tribe or Native Hawaiian organization given the totality of circumstances surrounding acquisition of the human remains or associated objects; and

(v) Describe those human remains, with or without associated funerary objects, that are culturally unidentifiable but that are subject to disposition under § 10.11.

(3) If the inventory results in a determination that the human remains are of an identifiable individual, the museum or Federal agency official must convey this information to the lineal

descendant of the deceased individual, if known, and to the Indian tribe or Native Hawaiian organization of which the deceased individual was culturally affiliated.

(4) The notice of inventory completion and a copy of the inventory must also be sent to the Manager, National NAGPRA Program. These submissions should be sent in both printed hard copy and electronic formats. Information on the proper format for electronic submission and suggested alternatives for museums and Federal agencies unable to meet these requirements are available from the Manager, National NAGPRA Program.

(5) Upon request by an Indian tribe or Native Hawaiian organization that has received or should have received a notice and inventory under paragraphs (e)(1) and (e)(2) of this section, a museum or Federal agency must supply additional available documentation.

(i) For purposes of this paragraph, ''documentation'' means a summary of existing museum or Federal agency records including inventories or catalogues, relevant studies, or other pertinent data for the limited purpose of determining the geographic origin, cultural affiliation, and basic facts surrounding the acquisition and accession of human remains and associated funerary objects.

(ii) Documentation supplied under this paragraph by a Federal agency or to a Federal agency is considered a public record except as exempted under relevant laws, such as the Freedom of Information Act (5 U.S.C. 552), Privacy Act (5 U.S.C. 552a), Archaeological Resources Protection Act (16 U.S.C. 470hh), National Historic Preservation Act (16 U.S.C. 470w–3), and any other legal authority exempting the information from public disclosure.

(iii) Neither a request for documentation nor any other provisions of this part may be construed as authorizing either:

(A) The initiation of new scientific studies of the human remains and associated funerary objects; or

(B) Other means of acquiring or preserving additional scientific information from the remains and objects.

(6) This paragraph applies when a the museum or Federal agency official determines that it has possession of or control over human remains or associated funerary objects that cannot be identified as affiliated with a lineal descendent, Indian tribe, or Native Hawaiian organization The museum or Federal agency must provide the Manager, National NAGPRA Program notice of its determination and a list of the culturally unidentifiable human remains and any associated funerary objects. The Manager, National NAGPRA Program must make this information available to members of the Review Committee. Culturally unidentifiable human remains, with or without associated funerary objects, are subject to disposition under § 10.11.

(7) The Manager, National NAGPRA Program must publish notices of inventory completion received from museums and Federal agencies in the FEDERAL REGISTER.

(f) *Completion*. Inventories must be completed not later than November 16, 1995. Any museum that has made a good faith effort to complete its inventory, but which will be unable to complete the process by this deadline, may request an extension of the time requirements from the Secretary. An indication of good faith efforts must include, but not necessarily be limited to, the initiation of active consultation and documentation regarding the collections and the development of a written plan to carry out the inventory process. Minimum components of an inventory plan are: a definition of the steps required; the position titles of the persons responsible for each step; a schedule for carrying out the plan; and a proposal to obtain the requisite funding.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41293, Aug. 1, 1997; 71 FR 16501, Apr. 3, 2006; 75 FR 12403, Mar.15, 2010]

§ 10.10 Repatriation.

(a) *Unassociated funerary objects, sacred objects, and objects of cultural patrimony*—(1) *Criteria*. Upon the request of a lineal descendant, Indian tribe, or Native Hawaiian organization, a museum or Federal agency must expeditiously repatriate unassociated funerary objects, sacred objects, or objects of cultural patrimony if all the following criteria are met:

(i) The object meets the definitions established in § 10.2 (d)(2)(ii), (d)(3), or (d)(4); and

(ii) The cultural affiliation of the object is established:

(A) Through the summary, consultation, and notification procedures in § 10.14 of these regulations; or

(B) By presentation of a preponderance of the evidence by a requesting Indian tribe or Native Hawaiian organization pursuant to section 7(c) of the Act; and

(iii) The known lineal descendant or culturally affiliated Indian tribe or Native Hawaiian organization presents evidence which, if standing alone before the introduction of evidence to the contrary, would support a finding that the museum or Federal agency does not have a right of possession to the objects as defined in § 10.10 (a)(2); and

(iv) The agency or museum is unable to present evidence to the contrary proving that it does have a right of possession as defined below; and

(v) None of the specific exceptions listed in § 10.10 (c) apply.

(2) *Right of possession.* For purposes of this section, ''right of possession'' means possession obtained with the voluntary consent of an individual or group that had authority of alienation. The original acquisition of a Native American unassociated funerary object, sacred object, or object of cultural patrimony from an Indian tribe or Native Hawaiian organization with the voluntary consent of an individual or group with authority to alienate such object is deemed to give right of possession to that object.

(3) *Notification.* Repatriation must take place within ninety (90) days of receipt of a written request for repatriation that satisfies the requirements of paragraph (a)(1) of this section from a lineal descendent or culturally affiliated Indian tribe or Native Hawaiian organization, provided that the repatriation may not occur until at least thirty (30) days after publication of the notice of intent to repatriate in the FEDERAL REGISTER as described in § 10.8.

(b) *Human remains and associated funerary objects*—(1) *Criteria.* Upon the request of a lineal descendant, Indian tribe, or Native Hawaiian organization, a museum and Federal agency must expeditiously repatriate human remains and associated funerary objects if all of the following criteria are met:

(i) The human remains or associated funerary object meets the definitions established in § 10.2 (d)(1) or (d)(2)(i); and

(ii) The affiliation of the deceased individual to known lineal descendant, present day Indian tribe, or Native Hawaiian organization:

(A) Has been reasonably traced through the procedures outlined in § 10.9 and § 10.14 of these regulations; or

(B) Has been shown by a preponderance of the evidence presented by a requesting Indian tribe or Native Hawaiian organization pursuant to section 7(c) of the Act; and

(iii) None of the specific exceptions listed in § 10.10 (c) apply.

(2) *Notification.* Repatriation must take place within ninety (90) days of receipt of a written request for repatriation that satisfies the requirements of § 10.10 (b)(1) from the culturally affiliated Indian tribe or Native Hawaiian organization, provided that the repatriation may not occur until at least thirty (30) days after publication of the notice of inventory completion in the FEDERAL REGISTER as described in § 10.9.

(c) *Exceptions.* These requirements for repatriation do not apply to:

(1) Circumstances where human remains, funerary objects, sacred objects, or objects of cultural patrimony are indispensable to the completion of a specific scientific study, the outcome of which is of major benefit to the United States. Human remains, funerary objects, sacred objects, or objects of cultural patrimony in such circumstances must be returned no later than ninety (90) days after completion of the study; or

(2) Circumstances where there are multiple requests for repatriation of human remains, funerary objects, sacred objects, or objects of cultural patrimony and the museum or Federal agency, after complying with these regulations, cannot determine by a preponderance of the evidence which requesting party is the most appropriate claimant. In such circumstances, the museum or Federal agency may retain the human remains, funerary objects,

sacred objects, or objects of cultural patrimony until such time as the requesting parties mutually agree upon the appropriate recipient or the dispute is otherwise resolved pursuant to these regulations or as ordered by a court of competent jurisdiction; or

(3) Circumstances where a court of competent jurisdiction has determined that the repatriation of the human remains, funerary objects, sacred objects, or objects of cultural patrimony in the possession or control of a museum would result in a taking of property without just compensation within the meaning of the Fifth Amendment of the United States Constitution, in which event the custody of the objects must be as provided under otherwise applicable law. Nothing in these regulations must prevent a museum or Federal agency, where otherwise so authorized, or a lineal descendant, Indian tribe, or Native Hawaiian organization, from expressly relinquishing title to, right of possession of, or control over any human remains, funerary objects, sacred objects, or objects of cultural patrimony.

(4) Circumstances where the repatriation is not consistent with other repatriation limitations identified in § 10.15 of these regulations.

(d) *Place and manner of repatriation.* The repatriation of human remains, funerary objects, sacred objects, or objects of cultural patrimony must be accomplished by the museum or Federal agency in consultation with the requesting lineal descendants, or culturally affiliated Indian tribe or Native Hawaiian organization, as appropriate, to determine the place and manner of the repatriation.

(e) The museum official or Federal agency official must inform the recipients of repatriations of any presently known treatment of the human remains, funerary objects, sacred objects, or objects of cultural patrimony with pesticides, preservatives, or other substances that represent a potential hazard to the objects or to persons handling the objects.

(f) *Record of repatriation.* (1) Museums and Federal agencies must adopt internal procedures adequate to permanently document the content and recipients of all repatriations.

(2) The museum official or Federal agency official, at the request of the Indian tribe official, may take such steps as are considered necessary pursuant to otherwise applicable law, to ensure that information of a particularly sensitive nature is not made available to the general public.

(g) *Culturally unidentifiable human remains.* If the cultural affiliation of human remains cannot be established pursuant to these regulations, the human remains must be considered culturally unidentifiable. Museum and Federal agency officials must report the inventory information regarding such human remains in their holdings to the Manager, National NAGPRA Program who will transmit this information to the Review Committee. The Review Committee is responsible for compiling an inventory of culturally unidentifiable human remains in the possession or control of each museum and Federal agency, and, for recommending to the Secretary specific actions for disposition of such human remains.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41294, Aug. 1, 1997; 71 FR 16501, Apr. 3, 2006]

§ 10.11 Disposition of culturally unidentifiable human remains.

(a) *General.* This section implements section 8(c)(5) of the Act and applies to human remains previously determined to be Native American under § 10.9, but for which no lineal descendant or culturally affiliated Indian tribe or Native Hawaiian organization has been identified.

(b) *Consultation.* (1) The museum or Federal agency official must initiate consultation regarding the disposition of culturally unidentifiable human remains and associated funerary objects:

(i) Within 90 days of receiving a request from an Indian tribe or Native Hawaiian organization to transfer control of culturally unidentifiable human remains and associated funerary objects; or

(ii) If no request is received, before any offer to transfer control of culturally unidentifiable human remains and associated funerary objects.

(2) The museum or Federal agency official must initiate consultation with

officials and traditional religious leaders of all Indian tribes and Native Hawaiian organizations:

(i) From whose tribal lands, at the time of the removal, the human remains and associated funerary objects were removed; and

(ii) From whose aboriginal lands the human remains and associated funerary objects were removed. Aboriginal occupation may be recognized by a final judgment of the Indian Claims Commission or the United States Court of Claims, or a treaty, Act of Congress, or Executive Order.

(3) The museum or Federal agency official must provide the following information in writing to all Indian tribes and Native Hawaiian organizations with which the museum or Federal agency consults:

(i) A list of all Indian tribes and Native Hawaiian organizations that are being, or have been, consulted regarding the particular human remains and associated funerary objects;

(ii) A list of any Indian groups that are not federally-recognized and are known to have a relationship of shared group identity with the particular human remains and associated funerary objects; and

(iii) An offer to provide a copy of the original inventory and additional documentation regarding the particular human remains and associated funerary objects.

(4) During consultation, museum and Federal agency officials must request, as appropriate, the following information from Indian tribes and Native Hawaiian organizations:

(i) The name and address of the Indian tribal official to act as representative in consultations related to particular human remains and associated funerary objects;

(ii) The names and appropriate methods to contact any traditional religious leaders who should be consulted regarding the human remains and associated funerary objects;

(iii) Temporal and geographic criteria that the museum or Federal agency should use to identify groups of human remains and associated funerary objects for consultation;

(iv) The names and addresses of other Indian tribes, Native Hawaiian organizations, or Indian groups that are not federally-recognized who should be included in the consultations; and

(v) A schedule and process for consultation.

(5) During consultation, the museum or Federal agency official should seek to develop a proposed disposition for culturally unidentifiable human remains and associated funerary objects that is mutually agreeable to the parties specified in paragraph (b)(2) of this section. The agreement must be consistent with this part.

(6) If consultation results in a determination that human remains and associated funerary objects previously determined to be culturally unidentifiable are actually related to a lineal descendant or culturally affiliated with an Indian tribe or Native Hawaiian organization, the notification and repatriation of the human remains and associated funerary objects must be completed as required by §10.9(e) and §10.10(b).

(c) *Disposition of culturally unidentifiable human remains and associated funerary objects.* (1) A museum or Federal agency that is unable to prove that it has right of possession, as defined at §10.10(a)(2), to culturally unidentifiable human remains must offer to transfer control of the human remains to Indian tribes and Native Hawaiian organizations in the following priority order:

(i) The Indian tribe or Native Hawaiian organization from whose tribal land, at the time of the excavation or removal, the human remains were removed; or

(ii) The Indian tribe or tribes that are recognized as aboriginal to the area from which the human remains were removed. Aboriginal occupation may be recognized by a final judgment of the Indian Claims Commission or the United States Court of Claims, or a treaty, Act of Congress, or Executive Order.

(2) If none of the Indian tribes or Native Hawaiian organizations identified in paragraph (c)(1) of this section agrees to accept control, a museum or Federal agency may:

(i) Transfer control of culturally unidentifiable human remains to other Indian tribes or Native Hawaiian organizations; or

(ii) Upon receiving a recommendation from the Secretary or authorized representative:

(A) Transfer control of culturally unidentifiable human remains to an Indian group that is not federally-recognized; or

(B) Reinter culturally unidentifiable human remains according to State or other law.

(3) The Secretary may make a recommendation under paragraph (c)(2)(ii) of this section only with proof from the museum or Federal agency that it has consulted with all Indian tribes and Native Hawaiian organizations listed in paragraph (c)(1) of this section and that none of them has objected to the proposed transfer of control.

(4) A museum or Federal agency may also transfer control of funerary objects that are associated with culturally unidentifiable human remains. The Secretary recommends that museums and Federal agencies transfer control if Federal or State law does not preclude it.

(5) The exceptions listed at § 10.10(c) apply to the requirements in paragraph (c)(1) of this section.

(6) Any disposition of human remains excavated or removed from Indian lands as defined by the Archaeological Resources Protection Act (16 U.S.C. 470bb (4)) must also comply with the provisions of that statute and its implementing regulations.

(d) *Notification*. (1) Disposition of culturally unidentifiable human remains and associated funerary objects under paragraph (c) of this section may not occur until at least 30 days after publication of a notice of inventory completion in the FEDERAL REGISTER as described in § 10.9.

(2) Within 30 days of publishing the notice of inventory completion, the National NAGPRA Program manager must:

(i) Revise the Review Committee inventory of culturally unidentifiable human remains and associated funerary objects to indicate the notice's publication; and

(ii) Make the revised Review Committee inventory accessible to Indian tribes, Native Hawaiian organizations, Indian groups that are not federally-recognized, museums, and Federal agencies.

(e) *Disputes*. Any person who wishes to contest actions taken by museums or Federal agencies regarding the disposition of culturally unidentifiable human remains and associated funerary objects should do so through informal negotiations to achieve a fair resolution. The Review Committee may facilitate informal resolution of any disputes that are not resolved by good faith negotiation under § 10.17. In addition, the United States District Courts have jurisdiction over any action brought that alleges a violation of the Act.

[75 FR 12403, Mar.15, 2010]

§ 10.12 Civil penalties.

(a) *The Secretary's authority to assess civil penalties*. The Secretary is authorized by section 9 of the Act to assess civil penalties on any museum that fails to comply with the requirements of the Act. The Assistant Secretary for Fish and Wildlife and Parks may act on behalf of the Secretary.

(b) *Definition of ''failure to comply.''* (1) Your museum has failed to comply with the requirements of the Act if it:

(i) After November 16, 1990, sells or otherwise transfers human remains, funerary objects, sacred objects, or objects of cultural patrimony contrary to provisions of the Act, including, but not limited to, an unlawful sale or transfer to any individual or institution that is not required to comply with the Act; or

(ii) After November 16, 1993, or a date specified under § 10.13, whichever deadline is applicable, has not completed summaries as required by the Act; or

(iii) After November 16, 1995, or a date specified under § 10.13, or the date specified in an extension issued by the Secretary, whichever deadline is applicable, has not completed inventories as required by the Act; or

(iv) After May 16, 1996, or 6 months after completion of an inventory under an extension issued by the Secretary, or 6 months after the date specified for completion of an inventory under § 10.13, whichever deadline is applicable, has not notified culturally affiliated Indian tribes and Native Hawaiian organizations; or

(v) Refuses, absent any of the exemptions specified in § 10.10(c) of this part, to repatriate human remains, funerary object, sacred object, or object of cultural patrimony to a lineal descendant or culturally affiliated Indian tribe or Native Hawaiian; or

(vi) Repatriates a human remains, funerary object, sacred object, or object of cultural patrimony before publishing the required notice in the FEDERAL REGISTER;

(vii) Does not consult with lineal descendants, Indian tribe officials, and traditional religious leaders as required; or

(viii) Does not inform the recipients of repatriations of any presently known treatment of the human remains, funerary objects, sacred objects, or objects of cultural patrimony with pesticides, preservatives, or other substances that represent a potential hazard to the objects or to persons handling the objects.

(ix) Upon receipt of a claim consistent with § 10.11(c)(1), refuses to offer to transfer control of culturally unidentifiable human remains for which it cannot prove right of possession.

(2) Each instance of failure to comply will constitute a separate violation.

(c) *How to Notify the Secretary of a Failure to Comply*. Any person may bring an allegation of failure to comply to the attention of the Secretary. Allegations must be in writing, and should include documentation identifying the provision of the Act with which there has been a failure to comply and supporting facts of the alleged failure to comply. Documentation should include evidence that the museum has possession or control of Native American cultural items, receives Federal funds, and has failed to comply with specific provisions of the Act. Written allegations should be sent to the attention of the Director, National Park Service, 1849 C Street, NW, Washington, D.C. 20240.

(d) *Steps the Secretary may take upon receiving such an allegation*. (1) The Secretary must acknowledge receipt of the allegation in writing.

(2) The Secretary also may:

(i) Compile and review information relevant to the alleged failure to comply. The Secretary may request additional information, such as declarations and relevant papers, books, and documents, from the person making the allegation, the museum, and other parties;

(ii) Identify the specific provisions of the Act with which you have allegedly failed to comply; and

(iii) Determine if the institution of a civil penalty action is an appropriate remedy.

(3) The Secretary must provide written notification to the person making the allegation and the museum if the review of the evidence does not show a failure comply.

(e) *How the Secretary notifies you of a failure to comply*. (1) If the allegations are verified, the Secretary must serve you with a written notice of failure to comply either by personal delivery or by registered or certified mail (return receipt requested). The notice of failure to comply must include:

(i) A concise statement of the facts believed to show a failure to comply;

(ii) A specific reference to the provisions of the Act and/or these regulations with which you allegedly have not complied; and

(iii) Notification of the right to request an informal discussion with the Secretary or a designee, to request a hearing, as provided below, or to await the Secretary's notice of assessment. The notice of failure to comply also must inform you of your right to seek judicial review of any final administrative decision assessing a civil penalty.

(2) With your consent, the Secretary may combine the notice of failure to comply with the notice of assessment described in paragraph (h) of this section.

(3) The Secretary also must send a copy of the notice of failure to comply to:

(i) Any lineal descendant of a known Native American individual whose human remains, funerary objects, or sacred objects are in question; and

(ii) Any Indian tribes or Native Hawaiian organizations that are, or are likely to be, culturally affiliated with the human remains, funerary objects, sacred objects, or objects of cultural patrimony in question.

(f) *Actions you may take upon receipt of a notice of failure to comply*. If you are

served with a notice of failure to comply, you may:

(1) Seek informal discussions with the Secretary;

(2) Request a hearing. Figure 1 outlines the civil penalty hearing and appeal process. Where the Secretary has issued a combined notice of failure to comply and notice of assessment, the hearing and appeal processes will also be combined.

(3) Take no action and await the Secretary's notice of assessment.

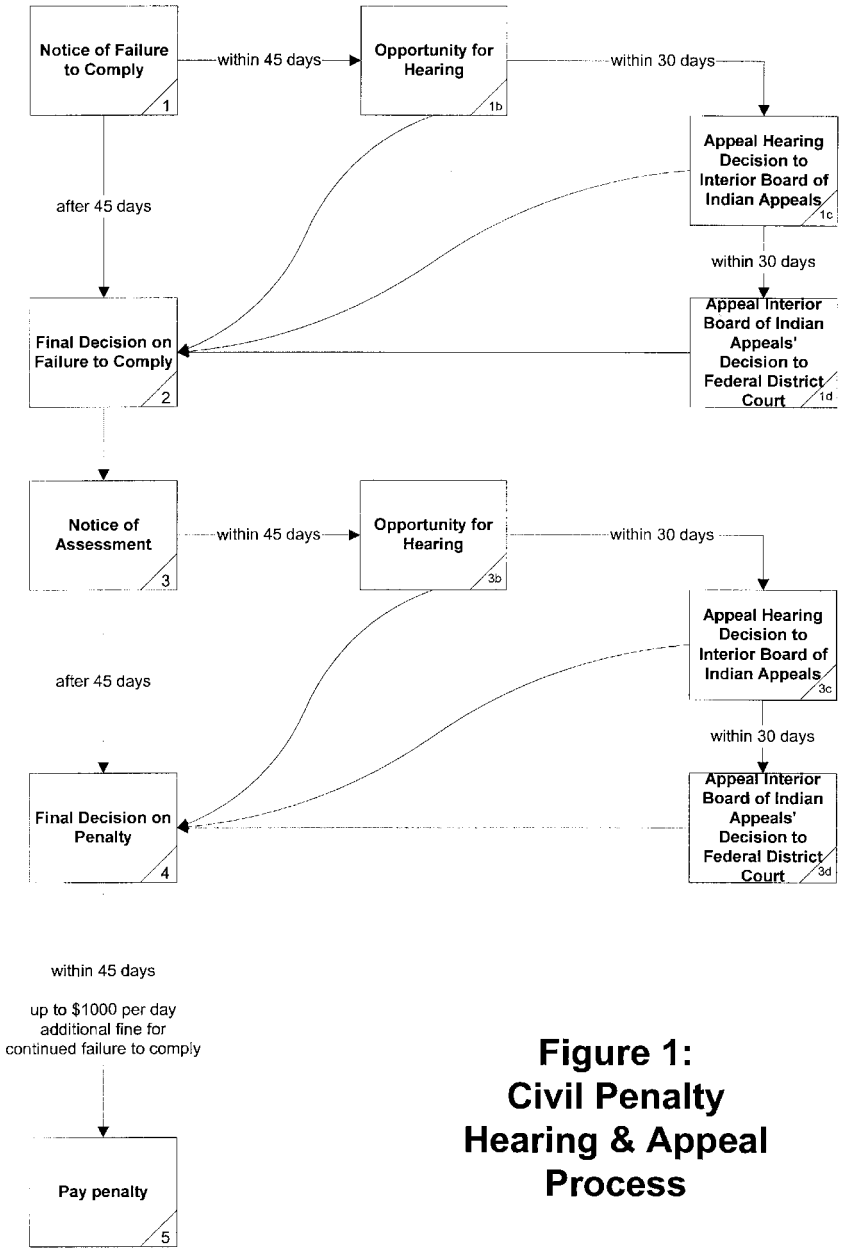

Figure 1: Civil Penalty Hearing & Appeal Process

(g) *How the Secretary determines the penalty amount.* (1) The penalty amount must be determined on the record;

(2) The penalty amount must be .25 percent of your museum's annual budget, or $5,000, whichever is less, and such additional sum as the Secretary may

determine is appropriate after taking into account:

(i) The archeological, historical, or commercial value of the human remains, funerary object, sacred object, or object of cultural patrimony involved; and

(ii) The damages suffered, both economic and non-economic, by the aggrieved party or parties including, but not limited to, expenditures by the aggrieved party to compel the museum to comply with the Act; and

(iii) The number of violations that have occurred at your museum.

(3) An additional penalty of up to $1,000 per day after the date that the final administrative decision takes effect may be assessed if your museum continues to violate the Act.

(4) The Secretary may reduce the penalty amount if there is:

(i) A determination that you did not willfully fail to comply; or

(ii) An agreement by you to mitigate the violation, including, but not limited to, payment of restitution to the aggrieved party or parties; or

(iii) A determination that you are unable to pay, provided that this factor may not apply if you have been previously found to have failed to comply with these regulations; or,

(iv) A determination that the penalty constitutes excessive punishment under the circumstances.

(h) *How the Secretary assesses the penalty*. (1) The Secretary considers all available information, including information provided during the process of assessing civil penalties or furnished upon further request by the Secretary.

(2) The Secretary may assess the civil penalty upon completing informal discussions or when the period for requesting a hearing expires, whichever is later.

(3) The Secretary notifies you in writing of the penalty amount assessed by serving a written notice of assessment, either in person or by registered or certified mail (return receipt requested). The notice of assessment includes:

(i) The basis for determining the penalty amount assessed and/or any offer to mitigate or remit the penalty; and

(ii) Notification of the right to request a hearing, including the procedures to follow, and to seek judicial review of any final administrative decision that assesses a civil penalty.

(i) *Actions that you may take upon receipt of a notice of assessment*. If you are served with a notice of assessment, you may do one of the following:

(1) Accept in writing or by payment of the proposed penalty, or any mitigation or remission offered in the notice of assessment. If you accept the proposed penalty, mitigation, or remission, you waive the right to request a hearing.

(2) Seek informal discussions with the Secretary.

(3) File a petition for relief. You may file a petition for relief with the Secretary within 45 calendar days of receiving the notice of assessment. Your petition for relief may request the Secretary to assess no penalty or to reduce the amount. Your petition must be in writing and signed by an official authorized to sign such documents. Your petition must set forth in full the legal or factual basis for the requested relief.

(4) Request a hearing. Figure 1 outlines the civil penalty hearing and appeal process.

(i) In addition to the documentation required in paragraph (g) of this section, your request must include a copy of the notice of assessment and must identify the basis for challenging the assessment.

(ii) In this hearing, the amount of the civil penalty assessed must be determined in accordance with paragraph (h) of this section, and will not be limited to the amount assessed by the Secretary or any offer of mitigation or remission made by the Secretary.

(j) *How you request a hearing*. (1) You may file a written, dated request for a hearing on a notice of failure to comply or notice of assessment with the Hearings Division, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North Quincy Street, Arlington, VA 22203. You must enclose a copy of the notice of failure to comply or the notice of assessment. Your request must state the relief sought, the basis for challenging the facts used as the basis for determining the failure to comply or fixing the assessment, and your preference of the place and date for a hearing. You must serve a copy of

the request on the Solicitor of the Department of the Interior personally or by registered or certified mail (return receipt requested) at the address specified in the notice of failure to comply or notice of assessment. Hearings must take place following procedures set forth in 43 CFR part 4, subparts A and B.

(2) Your failure to file a written request for a hearing within 45 days of the date of service of a notice of failure to comply or notice of assessment waives your right to a hearing.

(3) Upon receiving a request for a hearing, the Hearings Division assigns an administrative law judge to the case, gives notice of assignment promptly to the parties, and files all pleadings, papers, and other documents in the proceeding directly with the administrative law judge, with copies served on the opposing party.

(4) Subject to the provisions of 43 CFR 1.3, you may appear by representative or by counsel, and may participate fully in the proceedings. If you fail to appear and the administrative law judge determines that this failure is without good cause, the administrative law judge may, in his/her discretion, determine that this failure waives your right to a hearing and consent to the making of a decision on the record.

(5) Departmental counsel, designated by the Solicitor of the Department of the Interior, represents the Secretary in the proceedings. Upon notice to the Secretary of the assignment of an administrative law judge to the case, this counsel must enter his/her appearance on behalf of the Secretary and must file all petitions and correspondence exchanges by the Secretary and the respondent that become part of the hearing record. Thereafter, you must serve all documents for the Secretary on his/her counsel.

(6) *Hearing administration.* (i) The administrative law judge has all powers accorded by law and necessary to preside over the parties and the proceedings and to make decisions under 5 U.S.C. 554-557.

(ii) The transcript of testimony; the exhibits; and all papers, documents, and requests filed in the proceedings constitute the record for decision. The administrative law judge renders a written decision upon the record, which sets forth his/her findings of fact and conclusions of law, and the reasons and basis for them.

(iii) Unless you file a notice of appeal described in these regulations, the administrative law judge's decision constitutes the final administrative determination of the Secretary in the matter and takes effect 30 calendar days from this decision.

(k) *How you appeal a decision.* (1) Either you or the Secretary may appeal the decision of an administrative law judge by filing a ''Notice of Appeal'' with the Interior Board of Indian Appeals, U.S. Department of the Interior, 801 North Quincy Street, Arlington, VA 22203, within 30 calendar days of the date of the administrative law judge's decision. This notice must be accompanied by proof of service on the administrative law judge and the opposing party.

(2) To the extent they are not inconsistent with these regulations, the provisions of the Department of the Interior Hearings and Appeals Procedures in 43 CFR part 4, subpart D, apply to such appeal proceedings. The appeal board's decision on the appeal must be in writing and takes effect as the final administrative determination of the Secretary on the date that the decision is rendered, unless otherwise specified in the decision.

(3) You may obtain copies of decisions in civil penalty proceedings instituted under the Act by sending a request to the Interior Board of Indian Appeals, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North Quincy Street, Arlington, VA 22203. Fees for this service are established by the director of that office.

(l) *The final administrative decision.* (1) When you have been served with a notice of assessment and have accepted the penalty as provided in these regulations, the notice constitutes the final administrative decision.

(2) When you have been served with a notice of assessment and have not filed a timely request for a hearing as provided in these regulations, the notice of assessment constitutes the final administrative decision.

(3) When you have been served with a notice of assessment and have filed a

timely request for a hearing as provided in these regulations, the decision resulting from the hearing or any applicable administrative appeal from it constitutes the final administrative decision.

(m) *How you pay the penalty.* (1) If you are assessed a civil penalty, you have 45 calendar days from the date of issuance of the final administrative decision to make full payment of the penalty assessed to the Secretary, unless you have filed a timely request for appeal with a court of competent jurisdiction.

(2) If you fail to pay the penalty, the Secretary may request the Attorney General of the United States to collect the penalty by instituting a civil action in the U.S. District Court for the district in which your museum is located. In these actions, the validity and amount of the penalty is not subject to review by the court.

(3) Assessing a penalty under this section is not a waiver by the Secretary of the right to pursue other available legal or administrative remedies.

[68 FR 16360, Apr. 3, 2003, as amended at 70 FR 57179, Sept. 30, 2005; 75 FR 12404, Mar.15, 2010; 75 FR 64670, Oct. 20, 2010]

§ 10.13 Future applicability.

(a) General. This section sets forth the applicability of the Act to museums and Federal agencies after expiration of the statutory deadlines for completion of summaries and inventories.

(b) New holdings or collections.

(1) Any museum or Federal agency that, after completion of the summaries and inventories as required by §§ 10.8 and 10.9, receives a new holding or collection or locates a previously unreported current holding or collection that may include human remains, funerary objects, sacred objects or objects of cultural patrimony, must:

(i) Within 6 months of receiving a new holding or collection or locating a previously unreported current holding or collection, or within 6 months of the effective date of this rule, whichever is later, provide a summary of the holding or collection as required by § 10.8 to any Indian tribe or Native Hawaiian organization that is, or is likely to be, affiliated with the collection; and

(ii) Within 2 years of receiving a new holding or collection or locating a previously unreported current holding or collection, or within 2 years of the effective date of this rule, whichever is later, prepare, in consultation with any affiliated Indian tribe or Native Hawaiian organization, an inventory as required by § 10.9 of these regulations. Any museum that has made a good faith effort to complete its inventory, but which will be unable to complete the process by this deadline, may request an extension of the time requirements under § 10.9(f).

(2) Additional pieces or fragments of previously repatriated human remains, funerary objects, sacred objects and objects of cultural patrimony may be returned to the appropriate Indian tribe or Native Hawaiian organization without publication of a notice in the FEDERAL REGISTER, as otherwise required under §§ 10.8(f) and 10.9(e), if they do not change the number or cultural affiliation of the cultural items listed in the previous notice.

(3) A museum or Federal agency that receives a new holding or collection for which a summary or inventory was previously prepared, as required by §§ 10.8 or 10.9, may rely upon the previously prepared documents. The receiving museum or Federal agency must provide a copy of the previously prepared summary or inventory to all affiliated Indian tribes or Native Hawaiian organizations, along with notification that the receiving museum or Federal agency has assumed possession and control of the holding or collection.

(c) New Indian tribes.

(1) Any museum or Federal agency that has possession or control of human remains, funerary objects, sacred objects, or objects of cultural patrimony that are, or are likely to be, culturally affiliated with a newly Federally recognized Native American tribe, must:

(i) Within 6 months of the publication in the FEDERAL REGISTER of the Native American group's placement on the list of Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs, or within 6 months of the effective date of this rule, whichever is

later, provide a summary of the collection as required by § 10.8 to that Indian tribe; and

(ii) Within 2 years of the publication in the FEDERAL REGISTER of the Native American group's placement on the list of Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs, or within 2 years of the effective date of this rule, whichever is later, prepare, in consultation with the newly recognized culturally affiliated Indian tribe an inventory as required by § 10.9. Any museum that has made a good faith effort to complete its inventory, but which will be unable to complete the process by this deadline, may request an extension of the time requirements under § 10.9(f).

(2) The list of Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs is published in the FEDERAL REGISTER as required by provisions of the Federally Recognized Indian Tribe List Act of 1994 [Pub. L. 103–454, 108 Stat. 4791].

(d) New Federal funds. Any museum that has possession or control of human remains, funerary objects, sacred objects, or objects of cultural patrimony and receives Federal funds for the first time after expiration of the statutory deadlines for completion of summaries and inventories must:

(1) Within 3 years of the date of receipt of Federal funds, or within 3 years of the effective date of this rule, whichever is later, provide a summary of the collection as required by § 10.8 to any Indian tribe or Native Hawaiian organization that is, or is likely to be, culturally affiliated with the collections; and

(2) Within 5 years of the date of receipt of Federal funds, or within 5 years of the effective date of this rule, whichever is later, prepare, in consultation with any affiliated Indian tribe or Native Hawaiian organization, an inventory as required by § 10.9.

(e) Amendment of previous decision.

(1) Any museum or Federal agency that has previously published a notice in the FEDERAL REGISTER regarding the intent to repatriate unassociated funerary objects, sacred objects, and objects of cultural patrimony under § 10.8(f), or the completion of an inventory of Native American human remains and associated funerary objects as required by § 10.9(e), must publish an amendment to that notice if, based on subsequent information, the museum or Federal agency revises its decision in a way that changes the number or cultural affiliation of the cultural items listed.

(2) Repatriation may not occur until at least 30 days after publication of the amended notice in the FEDERAL REGISTER.

(f) All actions taken as required by this section must also comply with all other relevant sections of 43 CFR 10.

[72 FR 13189, Mar. 21, 2007]

Subpart D—General

§ 10.14 Lineal descent and cultural affiliation.

(a) *General.* This section identifies procedures for determining lineal descent and cultural affiliation between present-day individuals and Indian tribes or Native Hawaiian organizations and human remains, funerary objects, sacred objects, or objects of cultural patrimony in museum or Federal agency collections or excavated intentionally or discovered inadvertently from Federal lands. They may also be used by Indian tribes and Native Hawaiian organizations with respect to tribal lands.

(b) *Criteria for determining lineal descent.* A lineal descendant is an individual tracing his or her ancestry directly and without interruption by means of the traditional kinship system of the appropriate Indian tribe or Native Hawaiian organization or by the common law system of descendence to a known Native American individual whose remains, funerary objects, or sacred objects are being requested under these regulations. This standard requires that the earlier person be identified as an individual whose descendants can be traced.

(c) *Criteria for determining cultural affiliation.* Cultural affiliation means a relationship of shared group identity that may be reasonably traced historically or prehistorically between a present-day Indian tribe or Native Hawaiian organization and an identifiable

earlier group. All of the following requirements must be met to determine cultural affiliation between a present-day Indian tribe or Native Hawaiian organization and the human remains, funerary objects, sacred objects, or objects of cultural patrimony of an earlier group:

(1) Existence of an identifiable present-day Indian tribe or Native Hawaiian organization with standing under these regulations and the Act; and

(2) Evidence of the existence of an identifiable earlier group. Support for this requirement may include, but is not necessarily limited to evidence sufficient to:

(i) Establish the identity and cultural characteristics of the earlier group,

(ii) Document distinct patterns of material culture manufacture and distribution methods for the earlier group, or

(iii) Establish the existence of the earlier group as a biologically distinct population; and

(3) Evidence of the existence of a shared group identity that can be reasonably traced between the present-day Indian tribe or Native Hawaiian organization and the earlier group. Evidence to support this requirement must establish that a present-day Indian tribe or Native Hawaiian organization has been identified from prehistoric or historic times to the present as descending from the earlier group.

(d) A finding of cultural affiliation should be based upon an overall evaluation of the totality of the circumstances and evidence pertaining to the connection between the claimant and the material being claimed and should not be precluded solely because of some gaps in the record.

(e) *Evidence*. Evidence of a kin or cultural affiliation between a present-day individual, Indian tribe, or Native Hawaiian organization and human remains, funerary objects, sacred objects, or objects of cultural patrimony must be established by using the following types of evidence: Geographical, kinship, biological, archeological, anthropological, linguistic, folklore, oral tradition, historical, or other relevant information or expert opinion.

(f) *Standard of proof*. Lineal descent of a present-day individual from an earlier individual and cultural affiliation of a present-day Indian tribe or Native Hawaiian organization to human remains, funerary objects, sacred objects, or objects of cultural patrimony must be established by a preponderance of the evidence. Claimants do not have to establish cultural affiliation with scientific certainty.

§ 10.15 Limitations and remedies.

(a) *Failure to claim prior to repatriation*. (1) Any person who fails to make a timely claim prior to the repatriation or disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony is deemed to have irrevocably waived any right to claim such items pursuant to these regulations or the Act. For these purposes, a ''timely claim'' means the filing of a written claim with a responsible museum or Federal agency official prior to the time the particular human remains, funerary objects, sacred objects, or objects of cultural patrimony at issue are duly repatriated or disposed of to a claimant by a museum or Federal agency pursuant to these regulations.

(2) If there is more than one (1) claimant, the human remains, funerary object, sacred object, or objects of cultural patrimony may be held by the responsible museum or Federal agency or person in possession thereof pending resolution of the claim. Any person who is in custody of such human remains, funerary objects, sacred objects, or objects of cultural patrimony and does not claim entitlement to them must place the objects in the possession of the responsible museum or Federal agency for retention until the question of custody is resolved.

(b) *Failure to claim where no repatriation or disposition has occurred*. [Reserved]

(c) *Exhaustion of remedies*. (1) A person's administrative remedies are exhausted only when the person has filed a written claim with the responsible museum or Federal agency and the claim has been duly denied under this part. This paragraph applies to both:

(i) Human remains, funerary objects, sacred objects, or objects of cultural patrimony subject to Subpart B of this part; and

(ii) Federal lands subject to subpart C this part.

(2) A Federal agency's final denial of a repatriation request constitutes a final agency action under the Administrative Procedure Act (5 U.S.C. 704). As used in this paragraph, ''repatriation request'' means the request of a lineal descendant, Indian tribe, or Native Hawaiian organization for repatriation or disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony brought under the Act and this part.

(d) *Savings provisions*. Nothing in these regulations can be construed to:

(1) Limit the authority of any museum or Federal agency to:

(i) Return or repatriate human remains, funerary objects, sacred objects, or objects of cultural patrimony to Indian tribes, Native Hawaiian organizations, or individuals; and

(ii) Enter into any other agreement with the consent of the culturally affiliated Indian tribe or Native Hawaiian organization as to the disposition of, or control over, human remains, funerary objects, sacred objects, or objects of cultural patrimony.

(2) Delay actions on repatriation requests that were pending on November 16, 1990;

(3) Deny or otherwise affect access to court;

(4) Limit any procedural or substantive right which may otherwise be secured to individuals or Indian tribes or Native Hawaiian organizations; or

(5) Limit the application of any State or Federal law pertaining to theft of stolen property.

[60 FR 62158, Dec. 4, 1995, as amended at 62 FR 41294, Aug. 1, 1997; 75 FR 12405, Mar.15, 2010]

§ 10.16 Review committee.

(a) *General*. The Review Committee will advise Congress and the Secretary on matters relating to these regulations and the Act, including, but not limited to, monitoring the performance of museums and Federal agencies in carrying out their responsibilities, facilitating and making recommendations on the resolution of disputes as described further in § 10.17, and compiling a record of culturally unidentifiable human remains that are in the possession or control of museums and Federal agencies and recommending actions for their disposition.

(b) *Recommendations*. Any recommendation, finding, report, or other action of the Review Committee is advisory only and not binding on any person. Any records and findings made by the Review Committee may be admissible as evidence in actions brought by persons alleging a violation of the Act.

§ 10.17 Dispute resolution.

(a) *Formal and informal resolutions*. Any person who wishes to contest actions taken by museums, Federal agencies, Indian tribes, or Native Hawaiian organizations with respect to the repatriation and disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony is encouraged to do so through informal negotiations to achieve a fair resolution of the matter. The Review Committee may aid in this regard as described below. In addition, the United States District Courts have jurisdiction over any action brought that alleges a violation of the Act.

(b) *Review Committee Role*. The Review Committee may facilitate the informal resolution of disputes relating to these regulations among interested parties that are not resolved by good faith negotiations. Review Committee actions may include convening meetings between parties to disputes, making advisory findings as to contested facts, and making recommendations to the disputing parties or to the Secretary as to the proper resolution of disputes consistent with these regulations and the Act.

APPENDIX A TO PART 10—SAMPLE SUMMARY

The following is a generic sample and should be used as a guideline for preparation of summaries tailoring the information to the specific circumstances of each case.

Before November 17, 1993

Chairman or Other Authorized Official

Indian tribe or Native Hawaiian organization

Street

State

Dear Sir/Madame Chair:

I write to inform you of collections held by our museum which may contain unassociated funerary objects, sacred objects, or objects of cultural patrimony that are, or are likely to be, culturally affiliated with your Indian tribe or Native Hawaiian organization. This notification is required by section 6 of the Native American Graves Protection and Repatriation Act.

Our ethnographic collection includes approximately 200 items specifically identified as being manufactured or used by members of your Indian tribe or Native Hawaiian organization. These items represent various categories of material culture, including sea and land hunting, fishing, tools, household equipment, clothing, travel and transportation, personal adornment, smoking, toys, and figurines. The collection includes thirteen objects identified in our records as ''medicine bags.''

Approximately half of these items were collected by John Doe during his expedition to your reservation in 1903 and accessioned by the museum that same year (see Major Museum Publication, no. 65 (1965).

Another 50 of these items were collected by Jane Roe during her expeditions to your reservation between 1950–1960 and accessioned by the museum in 1970 (see Major Museum: no. 75 (1975). Accession information indicates that several of these items were collected from members of the Able and Baker families.

For the remaining approximately 50 items, which were obtained from various collectors between 1930 and 1980, additional collection information is not readily available.

In addition to the above mentioned items, the museum has approximately 50 ethnographic items obtained from the estate of a private collector and identified as being collected from the ''northwest portion of the State.''

Our archeological collection includes approximately 1,500 items recovered from ten archeological sites on your reservation and another 5,000 items from fifteen sites within the area recognized by the Indian Claims Commission as being part of your Indian tribe's aboriginal territory.

Please feel free to contact Fred Poe at (012) 345–6789 regarding the identification and potential repatriation of unassociated funerary objects, sacred objects, or objects of cultural patrimony in this collection that are, or are likely to be, culturally affiliated with your Indian tribe or Native Hawaiian organization. You are invited to review our records, catalogues, relevant studies or other pertinent data for the purpose of determining the geographic origin, cultural affiliation, and basic facts surrounding acquisition and accession of these items. We look forward to working together with you.

Sincerely,

Museum Official
Major Museum

APPENDIX B TO PART 10—SAMPLE NOTICE OF INVENTORY COMPLETION

The following is an example of a Notice of Inventory Completion published in the FEDERAL REGISTER.

National Park Service

Notice of Inventory Completion for Native American Human Remains and Associated Funerary Objects from Hancock County, ME, in the Control of the National Park Service.

AGENCY: National Park Service, Interior.

ACTION: Notice.

Notice is hereby given following provisions of the Native American Graves Protection and Repatriation Act, 25 U.S.C. 3003(d), of completion of the inventory of human remains and associated funerary objects from a site in Hancock County, ME, that are presently in the control of the National Park Service.

A detailed inventory and assessment of these human remains has been made by National Park Service curatorial staff, contracted specialists in physical anthropology and prehistoric archeology, and representatives of the Penobscot Nation, Aroostook Band of Micmac, Houlton Band of Maliseet, and the Passamaquoddy Nation, identified collectively hereafter as the Wabanaki Tribes of Maine.

The partial remains of at least seven individuals (including five adults, one subadult, and one child) were recovered in 1977 from a single grave at the Fernald Point Site (ME Site 43–24), a prehistoric shell midden on Mount Desert Island, within the boundary of Acadia National Park. A bone harpoon head, a modified beaver tooth, and several animal and fish bone fragments were found associated with the eight individuals. Radiocarbon assays indicate the burial site dates between 1035–1155 AD. The human remains and associated funerary objects have been catalogued as ACAD–5747, 5749, 5750, 5751, 5752, 5783, 5784. The partial remains of an eighth individual (an elderly male) was also recovered in 1977 from a second grave at the Fernald Point Site. No associated funerary objects were recovered with this individual. Radiocarbon assays indicate the second burial site dates between 480–680 AD. The human remains have been catalogued as ACAD–5748. The human remains and associated funerary objects of all nine individuals are currently in the possession of the University of Maine, Orono, ME.

Inventory of the human remains and associated funerary objects and review of the accompanying documentation indicates that no known individuals were identifiable. A representative of the Wabanaki Tribes of Maine has identified the Acadia National Park area as a historic gathering place for

his people and stated his belief that there exists a relationship of shared group identity between these individuals and the Wabanaki Tribes of Maine. The Prehistoric Subcommittee of the Maine State Historic Preservation Office's Archaeological Advisory Committee has found it reasonable to trace a shared group identity from the Late Prehistoric Period (1000–1500 AD) inhabitants of Maine as an undivided whole to the four modern Indian tribes known collectively as the Wabanaki Tribes of Maine on the basis of geographic proximity; survivals of stone, ceramic and perishable material culture skills; and probable linguistic continuity across the Late Prehistoric/Contact Period boundary. In a 1979 article, Dr. David Sanger, the archeologist who conducted the 1977 excavations at the Fernald Point Site and uncovered the abovementioned burials, recognizes a relationship between Maine sites dating to the Ceramic Period (2,000 B.P.–1600 A.D.) and present-day Algonkian speakers generally known as Abenakis, including the Micmac, Maliseet, Passamaquoddy, Penboscot, Kennebec, and Pennacook groups.

Based on the above mentioned information, officials of the National Park Service have determined that, pursuant to 25 U.S.C. 3001 (2), there is a relationship of shared group identity which can be reasonably traced between these human remains and associated funerary objects and the Wabanaki Tribes of Maine.

This notice has been sent to officials of the Wabanaki Tribes of Maine. Representatives of any other Indian tribe which believes itself to be culturally affiliated with these human remains and associated funerary objects should contact Len Bobinchock, Acting Superintendent, Acadia National Park, P.O. Box 177, Bar Harbor, ME 04609, telephone: (207) 288–0374, before August 31, 1994. Repatriation of these human remains and associated funerary objects to the Wabanaki Tribes of Maine may begin after that date if no additional claimants come forward.

Dated: July 21, 1994

Francis P. McManamon,
Departmental Consulting Archeologist,,
Chief, Archeological Assistance Division.

[Published: August 1, 1994]

PART 11—NATURAL RESOURCE DAMAGE ASSESSMENTS

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APPENDIX J

36 CFR 79

Curation of Federally-Owned and Administered Archaeological Collections

(b) If the waiver is still in effect at the time the Federal Agency Head receives recommendations from the Secretary, the Agency Head shall consider the recommendations and any comments received from the Advisory Council and the State Historic Preservation Officer before deciding whether to continue, withdraw, or modify the waiver. The Federal Agency Head shall respond to recommendations received from the Secretary either accepting or rejecting those recommendations, and, where recommendations are rejected, explaining the reasons for such a decision. Information copies of such response shall be forwarded by the Federal Agency Head to the Advisory Council on Historic Preservation and the appropriate State Historic Preservation Officer.

(c) If the waiver is no longer in effect at the time the Federal Agency Head receives recommendations from the Secretary or comments from the Advisory Council or the State Historic Preservation Officer, the Federal Agency Head should consider such recommendations and comments in similar future emergencies.

PART 79—CURATION OF FEDERALLY-OWNED AND ADMINISTERED ARCHAEOLOGICAL COLLECTIONS

Sec.

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AUTHORITY: 16 U.S.C. 470*aa-mm*, 16 U.S.C. 470 *et seq.*

SOURCE: 55 FR 37630, Sept. 12, 1990, unless otherwise noted.

§ 79.1 Purpose.

(a) The regulations in this part establish definitions, standards, procedures and guidelines to be followed by Federal agencies to preserve collections of prehistoric and historic material remains, and associated records, recovered under the authority of the Antiquities Act (16 U.S.C. 431–433), the Reservoir Salvage Act (16 U.S.C. 469–469*c*), section 110 of the National Historic Preservation Act (16 U.S.C. 470*h*–2) or the Archaeological Resources Protection Act (16 U.S.C. 470*aa-mm*). They establish:

(1) Procedures and guidelines to manage and preserve collections;

(2) Terms and conditions for Federal agencies to include in contracts, memoranda, agreements or other written instruments with repositories for curatorial services;

(3) Standards to determine when a repository has the capability to provide long-term curatorial services; and

(4) Guidelines to provide access to, loan and otherwise use collections.

(b) The regulations in this part contain three appendices that provide additional guidance for use by the Federal Agency Official.

(1) Appendix A to these regulations contains an example of an agreement between a Federal agency and a non-Federal owner of material remains who is donating the remains to the Federal agency.

(2) Appendix B to these regulations contains an example of a memorandum of understanding between a Federal agency and a repository for long-term curatorial services for a federally-owned collection.

(3) Appendix C to these regulations contains an example of an agreement between a repository and a third party for a short-term loan of a federally-owned collection (or a part thereof).

(4) The three appendices are meant to illustrate how such agreements might

appear. They should be revised according to the:

(i) Needs of the Federal agency and any non-Federal owner;

(ii) Nature and content of the collection; and

(iii) Type of contract, memorandum, agreement or other written instrument being used.

(5) When a repository has preexisting standard forms (e.g., a short-term loan form) that are consistent with the regulations in this part, those forms may be used in lieu of developing new ones.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

§ 79.2 Authority.

(a) The regulations in this part are promulgated pursuant to section 101(a)(7)(A) of the National Historic Preservation Act (16 U.S.C. 470*a*) which requires that the Secretary of the Interior issue regulations ensuring that significant prehistoric and historic artifacts, and associated records, recovered under the authority of section 110 of that Act (16 U.S.C. 470*h*–2), the Reservoir Salvage Act (16 U.S.C. 469–469*c*) and the Archaeological Resources Protection Act (16 U.S.C. 470*aa-mm*) are deposited in an institution with adequate long-term curatorial capabilities.

(b) In addition, the regulations in this part are promulgated pursuant to section 5 of the Archaeological Resources Protection Act (16 U.S.C. 470*dd*) which gives the Secretary of the Interior discretionary authority to promulgate regulations for the:

(1) Exchange, where appropriate, between suitable universities, museums or other scientific or educational institutions, of archeological resources recovered from public and Indian lands under that Act; and

(2) Ultimate disposition of archeological resources recovered under that Act (16 U.S.C. 470*aa-mm*), the Antiquities Act (16 U.S.C. 431–433) or the Reservoir Salvage Act (16 U.S.C. 469–469*c*).

(3) It further states that any exchange or ultimate disposition of resources excavated or removed from Indian lands shall be subject to the consent of the Indian or Indian tribe that owns or has jurisdiction over such lands.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

§ 79.3 Applicability.

(a) The regulations in this part apply to collections, as defined in § 79.4 of this part, that are excavated or removed under the authority of the Antiquities Act (16 U.S.C. 431–433), the Reservoir Salvage Act (16 U.S.C. 469–469*c*), section 110 of the National Historic Preservation Act (16 U.S.C. 470*h*-2) or the Archaeological Resources Protection Act (16 U.S.C. 470*aa-mm*). Such collections generally include those that are the result of a prehistoric or historic resource survey, excavation or other study conducted in connection with a Federal action, assistance, license or permit.

(1) Material remains, as defined in § 79.4 of this part, that are excavated or removed from a prehistoric or historic resource generally are the property of the landowner.

(2) Data that are generated as a result of a prehistoric or historic resource survey, excavation or other study are recorded in associated records, as defined in § 79.4 of this part. Associated records that are prepared or assembled in connection with a Federal or federally authorized prehistoric or historic resource survey, excavation or other study are the property of the U.S. Government, regardless of the location of the resource.

(b) The regulations in this part apply to preexisting and new collections that meet the requirements of paragraph (a) of this section. However, the regulations shall not be applied in a manner that would supersede or breach material terms and conditions in any contract, grant, license, permit, memorandum, or agreement entered into by or on behalf of a Federal agency prior to the effective date of this regulation.

(c) Collections that are excavated or removed pursuant to the Antiquities Act (16 U.S.C. 431–433) remain subject to that Act, the Act's implementing rule (43 CFR part 3), and the terms and conditions of the pertinent Antiquities Act permit or other approval.

(d) Collections that are excavated or removed pursuant to the Archaeological Resources Protection Act (16 U.S.C. 470*aa-mm*) remain subject to that Act, the Act's implementing rules (43 CFR part 7, 36 CFR part 296, 18 CFR part 1312, and 32 CFR part 229), and the terms and conditions of the pertinent Archaeological Resources Protection Act permit or other approval.

(e) Any repository that is providing curatorial services for a collection subject to the regulations in this part must possess the capability to provide adequate long-term curatorial services, as set forth in § 79.9 of this part, to safeguard and preserve the associated records and any material remains that are deposited in the repository.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

§ 79.4 Definitions.

As used for purposes of this part:

(a) *Collection* means material remains that are excavated or removed during a survey, excavation or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation or other study.

(1) *Material remains* means artifacts, objects, specimens and other physical evidence that are excavated or removed in connection with efforts to locate, evaluate, document, study, preserve or recover a prehistoric or historic resource. Classes of material remains (and illustrative examples) that may be in a collection include, but are not limited to:

(i) Components of structures and features (such as houses, mills, piers, fortifications, raceways, earthworks and mounds);

(ii) Intact or fragmentary artifacts of human manufacture (such as tools, weapons, pottery, basketry and textiles);

(iii) Intact or fragmentary natural objects used by humans (such as rock crystals, feathers and pigments);

(iv) By-products, waste products or debris resulting from the manufacture or use of man-made or natural materials (such as slag, dumps, cores and debitage);

(v) Organic material (such as vegetable and animal remains, and coprolites);

(vi) Human remains (such as bone, teeth, mummified flesh, burials and cremations);

(vii) Components of petroglyphs, pictographs, intaglios or other works of artistic or symbolic representation;

(viii) Components of shipwrecks (such as pieces of the ship's hull, rigging, armaments, apparel, tackle, contents and cargo);

(ix) Environmental and chronometric specimens (such as pollen, seeds, wood, shell, bone, charcoal, tree core samples, soil, sediment cores, obsidian, volcanic ash, and baked clay); and

(x) Paleontological specimens that are found in direct physical relationship with a prehistoric or historic resource.

(2) *Associated records* means original records (or copies thereof) that are prepared, assembled and document efforts to locate, evaluate, record, study, preserve or recover a prehistoric or historic resource. Some records such as field notes, artifact inventories and oral histories may be originals that are prepared as a result of the field work, analysis and report preparation. Other records such as deeds, survey plats, historical maps and diaries may be copies of original public or archival documents that are assembled and studied as a result of historical research. Classes of associated records (and illustrative examples) that may be in a collection include, but are not limited to:

(i) Records relating to the identification, evaluation, documentation, study, preservation or recovery of a resource (such as site forms, field notes, drawings, maps, photographs, slides, negatives, films, video and audio cassette tapes, oral histories, artifact inventories, laboratory reports, computer cards and tapes, computer disks and diskettes, printouts of computerized data, manuscripts, reports, and accession, catalog and inventory records);

(ii) Records relating to the identification of a resource using remote sensing methods and equipment (such as satellite and aerial photography and imagery, side scan sonar,

magnetometers, subbottom profilers, radar and fathometers);

(iii) Public records essential to understanding the resource (such as deeds, survey plats, military and census records, birth, marriage and death certificates, immigration and naturalization papers, tax forms and reports);

(iv) Archival records essential to understanding the resource (such as historical maps, drawings and photographs, manuscripts, architectural and landscape plans, correspondence, diaries, ledgers, catalogs and receipts); and

(v) Administrative records relating to the survey, excavation or other study of the resource (such as scopes of work, requests for proposals, research proposals, contracts, antiquities permits, reports, documents relating to compliance with section 106 of the National Historic Preservation Act (16 U.S.C. 470*f*), and National Register of Historic Places nomination and determination of eligibility forms).

(b) *Curatorial services*. Providing curatorial services means managing and preserving a collection according to professional museum and archival practices, including, but not limited to:

(1) Inventorying, accessioning, labeling and cataloging a collection;

(2) Identifying, evaluating and documenting a collection;

(3) Storing and maintaining a collection using appropriate methods and containers, and under appropriate environmental conditions and physically secure controls;

(4) Periodically inspecting a collection and taking such actions as may be necessary to preserve it;

(5) Providing access and facilities to study a collection; and

(6) Handling, cleaning, stabilizing and conserving a collection in such a manner to preserve it.

(c) *Federal Agency Official* means any officer, employee or agent officially representing the secretary of the department or the head of any other agency or instrumentality of the United States having primary management authority over a collection that is subject to this part.

(d) *Indian lands* has the same meaning as in §–.3(e) of uniform regulations 43 CFR part 7, 36 CFR part 296, 18 CFR part 1312, and 32 CFR part 229.

(e) *Indian tribe* has the same meaning as in §–.3(f) of uniform regulations 43 CFR part 7, 36 CFR part 296, 18 CFR part 1312, and 32 CFR part 229.

(f) *Personal property* has the same meaning as in 41 CFR 100–43.001–14. Collections, equipment (e.g., a specimen cabinet or exhibit case), materials and supplies are classes of personal property.

(g) *Public lands* has the same meaning as in §–.3(d) of uniform regulations 43 CFR part 7, 36 CFR part 296, 18 CFR part 1312, and 32 CFR part 229.

(h) *Qualified museum professional* means a person who possesses knowledge, experience and demonstrable competence in museum methods and techniques appropriate to the nature and content of the collection under the person's management and care, and commensurate with the person's duties and responsibilities. Standards that may be used, as appropriate, for classifying positions and for evaluating a person's qualifications include, but are not limited to, the following:

(1) The Office of Personnel Management's ''Position Classification Standards for Positions under the General Schedule Classification System'' (U.S. Government Printing Office, stock No. 906–-028–00000–0 (1981)) are used by Federal agencies to determine appropriate occupational series and grade levels for positions in the Federal service. Occupational series most commonly associated with museum work are the museum curator series (GS/GM–1015) and the museum technician and specialist series (GS/GM–1016). Other scientific and professional series that may have collateral museum duties include, but are not limited to, the archivist series (GS/GM–1420), the archeologist series (GS/GM–193), the anthropologist series (GS/GM–190), and the historian series (GS/GM–170). In general, grades GS–9 and below are assistants and trainees while grades GS–11 and above are professionals at the full performance level. Grades GS–11 and above are determined according to the level of independent professional responsibility, degree of specialization and scholarship, and the nature, variety, complexity, type and scope of the work.

(2) The Office of Personnel Management's ''Qualification Standards for Positions under the General Schedule (Handbook X–118)'' (U.S. Government Printing Office, stock No. 906–030–00000–4 (1986)) establish educational, experience and training requirements for employment with the Federal Government under the various occupational series. A graduate degree in museum science or applicable subject matter, or equivalent training and experience, and three years of professional experience are required for museum positions at grades GS–11 and above.

(3) The ''Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation'' (48 FR 44716, Sept. 29, 1983) provide technical advice about archeological and historic preservation activities and methods for use by Federal, State and local Governments and others. One section presents qualification standards for a number of historic preservation professions. While no standards are presented for collections managers, museum curators or technicians, standards are presented for other professions (i.e., historians, archeologists, architectural historians, architects, and historic architects) that may have collateral museum duties.

(4) Copies of the Office of Personnel Management's standards, including subscriptions for subsequent updates, may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Copies may be inspected at the Office of Personnel Management's Library, 1900 E Street NW., Washington, DC, at any regional or area office of the Office of Personnel Management, at any Federal Job Information Center, and at any personnel office of any Federal agency. Copies of the ''Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation'' are available at no charge from the Interagency Resources Division, National Park Service, P.O. Box 37127, Washington, DC 20013–7127.

(i) *Religious remains* means material remains that the Federal Agency Official has determined are of traditional religious or sacred importance to an Indian tribe or other group because of customary use in religious rituals or spiritual activities. The Federal Agency Official makes this determination in consultation with appropriate Indian tribes or other groups.

(j) *Repository* means a facility such as a museum, archeological center, laboratory or storage facility managed by a university, college, museum, other educational or scientific institution, a Federal, State or local Government agency or Indian tribe that can provide professional, systematic and accountable curatorial services on a long-term basis.

(k) *Repository Official* means any officer, employee or agent officially representing the repository that is providing curatorial services for a collection that is subject to this part.

(l) *Tribal Official* means the chief executive officer or any officer, employee or agent officially representing the Indian tribe.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

§ 79.5 Management and preservation of collections.

The Federal Agency Official is responsible for the long-term management and preservation of preexisting and new collections subject to this part. Such collections shall be placed in a repository with adequate long-term curatorial capabilities, as set forth in § 79.9 of this part, appropriate to the nature and content of the collections.

(a) *Preexisting collections.* The Federal Agency Official is responsible for ensuring that preexisting collections, meaning those collections that are placed in repositories prior to the effective date of this rule, are being properly managed and preserved. The Federal Agency Official shall identify such repositories, and review and evaluate the curatorial services that are being provided to preexisting collections. When the Federal Agency Official determines that such a repository does not have the capability to provide adequate long-term curatorial services, as set forth in § 79.9 of this part, the Federal Agency Official may either:

(1) Enter into or amend an existing contract, memorandum, agreement or other appropriate written instrument

for curatorial services for the purpose of:

(i) Identifying specific actions that shall be taken by the repository, the Federal agency or other appropriate party to eliminate the inadequacies;

(ii) Specifying a reasonable period of time and a schedule within which the actions shall be completed; and

(iii) Specifying any necessary funds or services that shall be provided by the repository, the Federal agency or other appropriate party to complete the actions; or

(2) Remove the collections from the repository and deposit them in another repository that can provide such services in accordance with the regulations in this part. Prior to moving any collection that is from Indian lands, the Federal Agency Official must obtain the written consent of the Indian landowner and the Indian tribe having jurisdiction over the lands.

(b) *New collections.* The Federal Agency Official shall deposit a collection in a repository upon determining that:

(1) The repository has the capability to provide adequate long-term curatorial services, as set forth in § 79.9 of this part;

(2) The repository's facilities, written curatorial policies and operating procedures are consistent with the regulations in this part;

(3) The repository has certified, in writing, that the collection shall be cared for, maintained and made accessible in accordance with the regulations in this part and any terms and conditions that are specified by the Federal Agency Official;

(4) When the collection is from Indian lands, written consent to the disposition has been obtained from the Indian landowner and the Indian tribe having jurisdiction over the lands; and

(5) The initial processing of the material remains (including appropriate cleaning, sorting, labeling, cataloging, stabilizing and packaging) has been completed, and associated records have been prepared and organized in accordance with the repository's processing and documentation procedures.

(c) *Retention of records by Federal agencies.* The Federal Agency Official shall maintain administrative records on the disposition of each collection including, but not limited to:

(1) The name and location of the repository where the collection is deposited;

(2) A copy of the contract, memorandum, agreement or other appropriate written instrument, and any subsequent amendments, between the Federal agency, the repository and any other party for curatorial services;

(3) A catalog list of the contents of the collection that is deposited in the repository;

(4) A list of any other Federal personal property that is furnished to the repository as a part of the contract, memorandum, agreement or other appropriate written instrument for curatorial services;

(5) Copies of reports documenting inspections, inventories and investigations of loss, damage or destruction that are conducted pursuant to § 79.11 of this part; and

(6) Any subsequent permanent transfer of the collection (or a part thereof) to another repository.

§ 79.6 Methods to secure curatorial services.

(a) Federal agencies may secure curatorial services using a variety of methods, subject to Federal procurement and property management statutes, regulations, and any agency-specific statutes and regulations on the management of museum collections. Methods that may be used by Federal agencies to secure curatorial services include, but are not limited to:

(1) Placing the collection in a repository that is owned, leased or otherwise operated by the Federal agency;

(2) Entering into a contract or purchase order with a repository for curatorial services;

(3) Entering into a cooperative agreement, a memorandum of understanding, a memorandum of agreement or other agreement, as appropriate, with a State, local or Indian tribal repository, a university, museum or other scientific or educational institution that operates or manages a repository, for curatorial services;

(4) Entering into an interagency agreement with another Federal agency for curatorial services;

(5) Transferring the collection to another Federal agency for preservation; and

(6) For archeological activities permitted on public or Indian lands under the Archaeological Resources Protection Act (16 U.S.C. 470 *aa-mm*), the Antiquities Act (16 U.S.C. 431–433) or other authority, requiring the archeological permittee to provide for curatorial services as a condition to the issuance of the archeological permit.

(b) *Guidelines for selecting a repository.* (1) When possible, the collection should be deposited in a repository that:

(i) Is in the State of origin;

(ii) Stores and maintains other collections from the same site or project location; or

(iii) Houses collections from a similar geographic region or cultural area.

(2) The collection should not be subdivided and stored at more than a single repository unless such subdivision is necessary to meet special storage, conservation or research needs.

(3) Except when non-federally-owned material remains are retained and disposed of by the owner, material remains and associated records should be deposited in the same repository to maintain the integrity and research value of the collection.

(c) *Sources for technical assistance.* The Federal Agency Official should consult with persons having expertise in the management and preservation of collections prior to preparing a scope of work or a request for proposals for curatorial services. This will help ensure that the resulting contract, memorandum, agreement or other written instrument meets the needs of the collection, including any special needs in regard to any religious remains. It also will aid the Federal Agency Official in evaluating the qualifications and appropriateness of a repository, and in determining whether the repository has the capability to provide adequate long-term curatorial services for a collection. Persons, agencies, institutions and organizations that may be able to provide technical assistance include, but are not limited to the:

(1) Federal agency's Historic Preservation Officer;

(2) State Historic Preservation Officer;

(3) Tribal Historic Preservation Officer;

(4) State Archeologist;

(5) Curators, collections managers, conservators, archivists, archeologists, historians and anthropologists in Federal and State Government agencies and Indian tribal museum;

(6) Indian tribal elders and religious leaders;

(7) Smithsonian Institution;

(8) American Association of Museums; and

(9) National Park Service.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

§ 79.7 Methods to fund curatorial services.

A variety of methods are used by Federal agencies to ensure that sufficient funds are available for adequate, long-term care and maintenance of collections. Those methods include, but are not limited to, the following:

(a) Federal agencies may fund a variety of curatorial activities using monies appropriated annually by the U.S. Congress, subject to any specific statutory authorities or limitations applicable to a particular agency. As appropriate, curatorial activities that may be funded by Federal agencies include, but are not limited to:

(1) Purchasing, constructing, leasing, renovating, upgrading, expanding, operating, and maintaining a repository that has the capability to provide adequate long-term curatorial services as set forth in § 79.9 of this part;

(2) Entering into and maintaining on a cost-reimbursable or cost-sharing basis a contract, memorandum, agreement, or other appropriate written instrument with a repository that has the capability to provide adequate long-term curatorial services as set forth in § 79.9 of this part;

(3) As authorized under section 110(g) of the National Historic Preservation Act (16 U.S.C. 470*h*–2), reimbursing a grantee for curatorial costs paid by the grantee as a part of the grant project;

(4) As authorized under section 110(g) of the National Historic Preservation Act (16 U.S.C. 470*h*–2), reimbursing a State agency for curatorial costs paid by the State agency to carry out the

historic preservation responsibilities of the Federal agency;

(5) Conducting inspections and inventories in accordance with § 79.11 of this part; and

(6) When a repository that is housing and maintaining a collection can no longer provide adequate long-term curatorial services, as set forth in § 79.9 of this part, either:

(i) Providing such funds or services as may be agreed upon pursuant to § 79.5(a)(1) of this part to assist the repository in eliminating the deficiencies; or

(ii) Removing the collection from the repository and depositing it in another repository that can provide curatorial services in accordance with the regulations in this part.

(b) As authorized under section 110(g) of the National Historic Preservation Act (16 U.S.C. 470*h*–2) and section 208(2) of the National Historic Preservation Act Amendments (16 U.S.C. 469*c*–2), for federally licensed or permitted projects or programs, Federal agencies may charge licensees and permittees reasonable costs for curatorial activities associated with identification, surveys, evaluation and data recovery as a condition to the issuance of a Federal license or permit.

(c) Federal agencies may deposit collections in a repository that agrees to provide curatorial services at no cost to the U.S. Government. This generally occurs when a collection is excavated or removed from public or Indian lands under a research permit issued pursuant to the Antiquities Act (16 U.S.C. 431–433) or the Archaeological Resources Protection Act (16 U.S.C. 470*aa*–*mm*). A repository also may agree to provide curatorial services as a public service or as a means of ensuring direct access to a collection for long-term study and use. Federal agencies should ensure that a repository that agrees to provide curatorial services at no cost to the U.S. Government has sufficient financial resources to support its operations and any needed improvements.

(d) Funds provided to a repository for curatorial services should include costs for initially processing, cataloging and accessioning the collection as well as costs for storing, inspecting, inventorying, maintaining, and conserving the collection on a long-term basis.

(1) Funds to initially process, catalog and accession a collection to be generated during identification and evaluation surveys should be included in project planning budgets.

(2) Funds to initially process, catalog and accession a collection to be generated during data recovery operations should be included in project mitigation budgets.

(3) Funds to store, inspect, inventory, maintain and conserve a collection on a long-term basis should be included in annual operating budgets.

(e) When the Federal Agency Official determines that data recovery costs may exceed the one percent limitation contained in the Archeological and Historic Preservation Act (16 U.S.C. 469*c*), as authorized under section 208(3) of the National Historic Preservation Act Amendments (16 U.S.C. 469*c*–2), the limitation may be waived, in appropriate cases, after the Federal Agency Official has:

(1) Obtained the concurrence of the Secretary of the U.S. Department of the Interior by sending a written request to the Departmental Consulting Archeologist, National Park Service, P.O. Box 37127, Washington, DC 20013–7127; and

(2) Notified the Committee on Energy and Natural Resources of the U.S. Senate and the Committee on Interior and Insular Affairs of the U.S. House of Representatives.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

§ 79.8 Terms and conditions to include in contracts, memoranda and agreements for curatorial services.

The Federal Agency Official shall ensure that any contract, memorandum, agreement or other appropriate written instrument for curatorial services that is entered into by or on behalf of that Official, a Repository Official and any other appropriate party contains the following:

(a) A statement that identifies the collection or group of collections to be covered and any other U.S. Government-owned personal property to be furnished to the repository;

(b) A statement that identifies who owns and has jurisdiction over the collection;

(c) A statement of work to be performed by the repository;

(d) A statement of the responsibilities of the Federal agency and any other appropriate party;

(e) When the collection is from Indian lands:

(1) A statement that the Indian landowner and the Indian tribe having jurisdiction over the lands consent to the disposition; and

(2) Such terms and conditions as may be requested by the Indian landowner and the Indian tribe having jurisdiction over the lands;

(f) When the collection is from a site on public lands that the Federal Agency Official has determined is of religious or cultural importance to any Indian tribe having aboriginal or historic ties to such lands, such terms and conditions as may have been developed pursuant to §–.7 of uniform regulations 43 CFR part 7, 36 CFR part 296, 18 CFR part 1312, and 32 CFR part 229;

(g) The term of the contract, memorandum or agreement; and procedures for modification, suspension, extension, and termination;

(h) A statement of costs associated with the contract, memorandum or agreement; the funds or services to be provided by the repository, the Federal agency and any other appropriate party; and the schedule for any payments;

(i) Any special procedures and restrictions for handling, storing, inspecting, inventorying, cleaning, conserving, and exhibiting the collection;

(j) Instructions and any terms and conditions for making the collection available for scientific, educational and religious uses, including procedures and criteria to be used by the Repository Official to review, approve or deny, and document actions taken in response to requests for study, laboratory analysis, loan, exhibition, use in religious rituals or spiritual activities, and other uses. When the Repository Official to approve consumptive uses, this should be specified; otherwise, the Federal Agency Official should review and approve consumptive uses. When the repository's existing operating procedures and criteria for evaluating requests to use collections are consistent with the regulations in this part, they may be used, after making any necessary modifications, in lieu of developing new ones;

(k) Instructions for restricting access to information relating to the nature, location and character of the prehistoric or historic resource from which the material remains are excavated or removed;

(l) A statement that copies of any publications resulting from study of the collection are to be provided to the Federal Agency Official and, when the collection is from Indian lands, to the Tribal Official and the Tribal Historic Preservation Officer, if any, of the Indian tribe that owns or has jurisdiction over such lands;

(m) A statement that specifies the frequency and methods for conducting and documenting the inspections and inventories stipulated in § 79.11 of this part;

(n) A statement that the Repository Official shall redirect any request for transfer or repatriation of a federally-owned collection (or any part thereof) to the Federal Agency Official, and redirect any request for transfer or repatriation of a federally administered collection (or any part thereof) to the Federal Agency Official and the owner;

(o) A statement that the Repository Official shall not transfer, repatriate or discard a federally-owned collection (or any part thereof) without the written permission of the Federal Agency Official, and not transfer, repatriate or discard a federally administered collection (or any part thereof) without the written permission of the Federal Agency Official and the owner;

(p) A statement that the Repository Official shall not sell the collection; and

(q) A statement that the repository shall provide curatorial services in accordance with the regulations in this part.

§ 79.9 Standards to determine when a repository possesses the capability to provide adequate long-term curatorial services.

The Federal Agency Official shall determine that a repository has the capability to provide adequate long-term curatorial services when the repository is able to:

(a) Accession, label, catalog, store, maintain, inventory and conserve the particular collection on a long-term basis using professional museum and archival practices; and

(b) Comply with the following, as appropriate to the nature and consent of the collection;

(1) Maintain complete and accurate records of the collection, including:

(i) Records on acquisitions;

(ii) Catalog and artifact inventory lists;

(iii) Descriptive information, including field notes, site forms and reports;

(iv) Photographs, negatives and slides;

(v) Locational information, including maps;

(vi) Information on the condition of the collection, including any completed conservation treatments;

(vii) Approved loans and other uses;

(viii) Inventory and inspection records, including any environmental monitoring records;

(ix) Records on lost, deteriorated, damaged or destroyed Government property; and

(x) Records on any deaccessions and subsequent transfers, repatriations or discards, as approved by the Federal Agency Official;

(2) Dedicate the requisite facilities, equipment and space in the physical plant to properly store, study and conserve the collection. Space used for storage, study, conservation and, if exhibited, any exhibition must not be used for non-curatorial purposes that would endanger or damage the collection;

(3) Keep the collection under physically secure conditions within storage, laboratory, study and any exhibition areas by:

(i) Having the physical plant meet local electrical, fire, building, health and safety codes;

(ii) Having an appropriate and operational fire detection and suppression system;

(iii) Having an appropriate and operational intrusion detection and deterrent system;

(iv) Having an adequate emergency management plan that establishes procedures for responding to fires, floods, natural disasters, civil unrest, acts of violence, structural failures and failures of mechanical systems within the physical plant;

(v) Providing fragile or valuable items in a collection with additional security such as locking the items in a safe, vault or museum specimen cabinet, as appropriate;

(vi) Limiting and controlling access to keys, the collection and the physical plant; and

(vii) Inspecting the physical plant in accordance with § 79.11 of this part for possible security weaknesses and environmental control problems, and taking necessary actions to maintain the integrity of the collection;

(4) Require staff and any consultants who are responsible for managing and preserving the collection to be qualified museum professionals;

(5) Handle, store, clean, conserve and, if exhibited, exhibit the collection in a manner that:

(i) Is appropriate to the nature of the material remains and associated records;

(ii) Protects them from breakage and possible deterioration from adverse temperature and relative humidity, visible light, ultraviolet radiation, dust, soot, gases, mold, fungus, insects, rodents and general neglect; and

(iii) Preserves data that may be studied in future laboratory analyses. When material remains in a collection are to be treated with chemical solutions or preservatives that will permanently alter the remains, when possible, retain untreated representative samples of each affected artifact type, environmental specimen or other category of material remains to be treated. Untreated samples should not be stabilized or conserved beyond dry brushing;

(6) Store site forms, field notes, artifacts inventory lists, computer disks and tapes, catalog forms and a copy of

the final report in a manner that will protect them from theft and fire such as:

(i) Storing the records in an appropriate insulated, fire resistant, locking cabinet, safe, vault or other container, or in a location with a fire suppression system;

(ii) Storing a duplicate set of records in a separate location; or

(iii) Ensuring that records are maintained and accessible through another party. For example, copies of final reports and site forms frequently are maintained by the State Historic Preservation Officer, the State Archeologist or the State museum or university. The Tribal Historic Preservation Officer and Indian tribal museum ordinarily maintain records on collections recovered from sites located on Indian lands. The National Technical Information Service and the Defense Technical Information Service maintain copies of final reports that have been deposited by Federal agencies. The National Archeological Database maintains summary information on archeological reports and projects, including information on the location of those reports.

(7) Inspect the collection in accordance with § 79.11 of this part for possible deterioration and damage, and perform only those actions as are absolutely necessary to stabilize the collection and rid it of any agents of deterioration;

(8) Conduct inventories in accordance with § 79.11 of this part to verify the location of the material remains, associated records and any other Federal personal property that is furnished to the repository; and

(9) Provide access to the collection in accordance with § 79.10 of this part.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

§ 79.10 Use of collections.

(a) The Federal Agency Official shall ensure that the Repository Official makes the collection available for scientific, educational and religious uses, subject to such terms and conditions as are necessary to protect and preserve the condition, research potential, religious or sacred importance, and uniqueness of the collection.

(b) *Scientific and educational uses.* A collection shall be made available to qualified professionals for study, loan and use for such purposes as in-house and traveling exhibits, teaching, public interpretation, scientific analysis and scholarly research. Qualified professionals would include, but not be limited to, curators, conservators, collection managers, exhibitors, researchers, scholars, archeological contractors and educators. Students may use a collection when under the direction of a qualified professional. Any resulting exhibits and publications shall acknowledge the repository as the curatorial facility and the Federal agency as the owner or administrator, as appropriate. When the collection is from Indian lands and the Indian landowner and the Indian tribe having jurisdiction over the lands wish to be identified, those individuals and the Indian tribe shall also be acknowledged. Copies of any resulting publications shall be provided to the Repository Official and the Federal Agency Official. When Indian lands are involved, copies of such publications shall also be provided to the Tribal Official and the Tribal Historic Preservation Officer, if any, of the Indian tribe that owns or has jurisdiction over such lands.

(c) *Religious uses.* Religious remains in a collection shall be made available to persons for use in religious rituals or spiritual activities. Religious remains generally are of interest to medicine men and women, and other religious practitioners and persons from Indian tribes, Alaskan Native corporations, Native Hawaiians, and other indigenous and immigrant ethnic, social and religious groups that have aboriginal or historic ties to the lands from which the remains are recovered, and have traditionally used the remains or class of remains in religious rituals or spiritual activities.

(d) *Terms and conditions.* (1) In accordance with section 9 of the Archaeological Resources Protection Act (16 U.S.C. 470*hh*) and section 304 of the National Historic Preservation Act (16 U.S.C. 470 *w*–3), the Federal Agency Official shall restrict access to associated records that contain information relating to the nature, location or character

of a prehistoric or historic resource unless the Federal Agency Official determines that such disclosure would not create a risk of harm, theft or destruction to the resource or to the area or place where the resource is located.

(2) Section –.18(a)(2) of uniform regulations 43 CFR part 7, 36 CFR part 296, 18 CFR part 1312, and 32 CFR part 229 sets forth procedures whereby information relating to the nature, location or character of a prehistoric or historic resource may be made available to the Governor of any State. The Federal Agency Official may make information available to other persons who, following the procedures in §–.18(a)(2) of the referenced uniform regulations, demonstrate that the disclosure will not create a risk of harm, theft or destruction to the resource or to the area or place where the resource is located. Other persons generally would include, but not be limited to, archeological contractors, researchers, scholars, tribal representatives, Federal, State and local agency personnel, and other persons who are studying the resource or class or resources.

(3) When a collection is from Indian lands, the Federal Agency Official shall place such terms and conditions as may be requested by the Indian landowner and the Indian tribe having jurisdiction over the lands on:

(i) Scientific, educational or religious uses of material remains; and

(ii) Access to associated records that contain information relating to the nature, location or character of the resource.

(4) When a collection is from a site on public lands that the Federal Agency Official has determined is of religious or cultural importance to any Indian tribe having aboriginal or historic ties to such lands, the Federal Agency Official shall place such terms and conditions as may have been developed pursuant to §–.7 of uniform regulations 43 CFR part 7, 36 CFR part 296, 18 CFR part 1312, and 32 CFR part 229 on:

(i) Scientific, educational or religious uses of material remains; and

(ii) Access to associated records that contain information relating to the nature, location or character of the resource.

(5) The Federal Agency Official shall not allow uses that would alter, damage or destroy an object in a collection unless the Federal Agency Official determines that such use is necessary for scientific studies or public interpretation, and the potential gain in scientific or interpretive information outweighs the potential loss of the object. When possible, such use should be limited to unprovenienced, nonunique, nonfragile objects, or to a sample of objects drawn from a larger collection of similar objects.

(e) No collection (or a part thereof) shall be loaned to any person without a written agreement between the Repository Official and the borrower that specifies the terms and conditions of the loan. Appendix C to the regulations in this part contains an example of a short-term loan agreement for a federally-owned collection. At a minimum, a loan agreement shall specify:

(1) The collection or object being loaned;

(2) The purpose of the loan;

(3) The length of the loan;

(4) Any restrictions on scientific, educational or religious uses, including whether any object may be altered, damaged or destroyed;

(5) Except as provided in paragraph (e)(4) of this section, that the borrower shall handle the collection or object being borrowed during the term of the loan in accordance with this part so as not to damage or reduce its scientific, educational, religious or cultural value; and

(6) Any requirements for insuring the collection or object being borrowed for any loss, damage or destruction during transit and while in the borrower's possession.

(f) The Federal Agency Official shall ensure that the Repository Official maintains administrative records that document approved scientific, educational and religious uses of the collection.

(g) The Repository Official may charge persons who study, borrow or use a collection (or a part thereof) reasonable fees to cover costs for handling, packing, shipping and insuring material remains, for photocopying associated records, and for other related incidental costs.

§ 79.11 Conduct of inspections and inventories.

(a) The inspections and inventories specified in this section shall be conducted periodically in accordance with the Federal Property and Administrative Services Act (40 U.S.C. 484), its implementing regulation (41 CFR part 101), any agency-specific regulations on the management of Federal property, and any agency-specific statutes and regulations on the management of museum collections.

(b) Consistent with paragraph (a) of this section, the Federal Agency Official shall ensure that the Repository Official:

(1) Provides the Federal Agency Official and, when the collection is from Indian lands, the Indian landowner and the Tribal Official of the Indian tribe that has jurisdiction over the lands with a copy of the catalog list of the contents of the collection received and accessioned by the repository;

(2) Provides the Federal Agency Official will a list of any other U.S. Government-owned personal property received by the repository;

(3) Periodically inspects the physical plant for the purpose of monitoring the physical security and environmental control measures;

(4) Periodically inspects the collection for the purposes of assessing the condition of the material remains and associated records, and of monitoring those remains and records for possible deterioration and damage;

(5) Periodically inventories the collection by accession, lot or catalog record for the purpose of verifying the location of the material remains and associated records;

(6) Periodically inventories any other U.S. Government-owned personal property in the possession of the repository;

(7) Has qualified museum professionals conduct the inspections and inventories;

(8) Following each inspection and inventory, prepares and provides the Federal Agency Official with a written report of the results of the inspection and inventory, including the status of the collection, treatments completed and recommendations for additional treatments. When the collection is from Indian lands, the Indian landowner and the Tribal Official of the Indian tribe that has jurisdiction over the lands shall also be provided with a copy of the report;

(9) Within five (5) days of the discovery of any loss or theft of, deterioration and damage to, or destruction of the collection (or a part thereof) or any other U.S. Government-owned personal property, prepares and provides the Federal Agency Official with a written notification of the circumstances surrounding the loss, theft, deterioration, damage or destruction. When the collection is from Indian lands, the Indian landowner and the Tribal Official of the Indian tribe that has jurisdiction over the lands shall also be provided with a copy of the notification; and

(10) Makes the repository, the collection and any other U.S. Government-owned personal property available for periodic inspection by the:

(i) Federal Agency Official;

(ii) When the collection is from Indian lands, the Indian landowner and the Tribal Official of the Indian tribe that has jurisdiction over the lands; and

(iii) When the collection contains religious remains, the Indian tribal elders, religious leaders, and other officials representing the Indian tribe or other group for which the remains have religious or sacred importance.

(c) Consistent with paragraph (a) of this section, the Federal Agency Official shall have qualified Federal agency professionals:

(1) Investigate reports of a lost, stolen, deteriorated, damaged or destroyed collection (or a part thereof) or any other U.S. Government-owned personal property; and

(2) Periodically inspect the repository, the collection and any other U.S. Government-owned personal property for the purposes of:

(i) Determining whether the repository is in compliance with the minimum standards set forth in § 79.9 of this part; and

(ii) Evaluating the performance of the repository in providing curatorial services under any contract, memorandum, agreement or other appropriate written instrument.

(d) The frequency and methods for conducting and documenting inspections and inventories stipulated in this section shall be mutually agreed upon, in writing, by the Federal Agency Official and the Repository Official, and be appropriate to the nature and content of the collection:

(1) Collections from Indian lands shall be inspected and inventoried in accordance with such terms and conditions as may be requested by the Indian landowner and the Indian tribe having jurisdiction over the lands.

(2) Religious remains in collections from public lands shall be inspected and inventoried in accordance with such terms and conditions as may have been developed pursuant to §–.7 of uniform regulations 43 CFR part 7, 36 CFR part 296, 18 CFR part 1312, and 32 CFR part 229.

(3) Material remains and records of a fragile or perishable nature should be inspected for deterioration and damage on a more frequent basis than lithic or more stable remains or records.

(4) Because frequent handling will accelerate the breakdown of fragile materials, material remains and records should be viewed but handled as little as possible during inspections and inventories.

(5) Material remains and records of a valuable nature should be inventoried on a more frequent basis than other less valuable remains or records.

(6) Persons such as those listed in §79.6(c) of this part who have expertise in the management and preservation of similar collections should be able to provide advice to the Federal Agency Official concerning the appropriate frequency and methods for conducting inspections and inventories of a particular collection.

(e) Consistent with the Single Audit Act (31 U.S.C. 75), when two or more Federal agencies deposit collections in the same repository, the Federal Agency Officials should enter into an interagency agreement for the purposes of:

(1) Requesting the Repository Official to coordinate the inspections and inventories, stipulated in paragraph (b) of this section, for each of the collections;

(2) Designating one or more qualified Federal agency professionals to:

(i) Conduct inspections, stipulated in paragraph (c)(2) of this section, on behalf of the other agencies; and

(ii) Following each inspection, prepare and distribute to each Federal Agency Official a written report of findings, including an evaluation of performance and recommendations to correct any deficiencies and resolve any problems that were identified. When the collection is from Indian lands, the Indian landowner and the Tribal Official of the Indian tribe that has jurisdiction over the lands shall also be provided with a copy of the report; and

(3) Ensuring consistency in the conduct of inspections and inventories conducted pursuant to this section.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

APPENDIX A TO PART 79—EXAMPLE OF A DEED OF GIFT

DEED OF GIFT
TO THE
(Name of the Federal agency)

Whereas, the (name of the Federal agency), hereinafter called the Recipient, is dedicated to the preservation and protection of artifacts, specimens and associated records that are generated in connection with its projects and programs;

Whereas, certain artifacts and specimens, listed in Attachment A to this Deed of Gift, were recovered from the (name of the prehistoric or historic resource) site in connection with the Recipient's (name of the Recipient's project) project;

Whereas, the (name of the prehistoric or historic resource) site is located on lands to which title is held by (name of the donor), hereinafter called the Donor, and that the Donor holds free and clear title to the artifacts and specimens; and

Whereas, the Donor is desirous of donating the artifacts and specimens to the Recipient to ensure their continued preservation and protection;

Now therefore, the Donor does hereby unconditionally donate to the Recipient, for unrestricted use, the artifacts and specimens listed in Attachment A to this Deed of Gift; and

The Recipient hereby gratefully acknowleges the receipt of the artifacts and specimens.

Signed: (signature of the Donor)

Date: (date)

Signed: (signature of the Federal Agency Official)

Date: (date)

Attachment A: Inventory of Artifacts and Specimens.

[55 FR 37630, Sept. 12, 1990; 55 FR 41639, Oct. 10, 1990]

APPENDIX B TO PART 79—EXAMPLE OF A MEMORANDUM OF UNDERSTANDING FOR CURATORIAL SERVICES FOR A FEDERALLY-OWNED COLLECTION

MEMORANDUM OF UNDERSTANDING FOR CURATORIAL SERVICES BETWEEN THE
(Name of the Federal agency)
AND THE
(Name of the Repository)

This Memorandum of Understanding is entered into this (day) day of (month and year), between the United States of America, acting by and through the (name of the Federal agency), hereinafter called the Depositor, and the (name of the Repository), hereinafter called the Repository, in the State of (name of the State).

The Parties do witnesseth that,

Whereas, the Depositor has the responsibility under Federal law to preserve for future use certain collections of archeological artifacts, specimens and associated records, herein called the Collection, listed in Attachment A which is attached hereto and made a part hereof, and is desirous of obtaining curatorial services; and

Whereas, the Repository is desirous of obtaining, housing and maintaining the Collection, and recognizes the benefits which will accrue to it, the public and scientific interests by housing and maintaining the Collection for study and other educational purposes; and

Whereas, the Parties hereto recognize the Federal Government's continued ownership and control over the Collection and any other U.S. Government-owned personal property, listed in Attachment B which is attached hereto and made a part hereof, provided to the Repository, and the Federal Government's responsibility to ensure that the Collection is suitably managed and preserved for the public good; and

Whereas, the Parties hereto recognize the mutual benefits to be derived by having the Collection suitably housed and maintained by the Repository;

Now therefore, the Parties do mutually agree as follows:

1. The Repository shall:

a. Provide for the professional care and management of the Collection from the (names of the prehistoric and historic resources) sites, assigned (list site numbers) site numbers. The collections were recovered in connection with the (name of the Federal or federally-authorized project) project, located in (name of the nearest city or town), (name of the county) county, in the State of (name of the State).

b. Perform all work necessary to protect the Collection in accordance with the regulation 36 CFR part 79 for the curation of federally-owned and administered archeological collections and the terms and conditions stipulated in Attachment C to this Memorandum.

c. Assign as the Curator, the Collections Manager and the Conservator having responsibility for the work under this Memorandum, persons who are qualified museum professionals and whose expertise is appropriate to the nature and content of the Collection.

d. Begin all work on or about (month, date and year) and continue for a period of (number of years) years or until sooner terminated or revoked in accordance with the terms set forth herein.

e. Provide and maintain a repository facility having requisite equipment, space and adequate safeguards for the physical security and controlled environment for the Collection and any other U.S. Government-owned personal property in the possession of the Repository.

f. Not in any way adversely alter or deface any of the Collection except as may be absolutely necessary in the course of stabilization, conservation, scientific study, analysis and research. Any activity that will involve the intentional destruction of any of the Collection must be approved in advance and in writing by the Depositor.

g. Annually inspect the facilities, the Collection and any other U.S. Government-owned personal property. Every (number of years) years inventory the Collection and any other U.S. Government-owned personal property. Perform only those conservation treatments as are absolutely necessary to ensure the physical stability and integrity of the Collection, and report the results of inventories, inspections and treatments to the Depositor.

h. Within five (5) days of discovery, report all instances of and circumstances surrounding loss of, deterioration and damage to, or destruction of the Collection and any other U.S. Government-owned personal property to the Depositor, and those actions taken to stabilize the Collection and to correct any deficiencies in the physical plant or operating procedures that may have contributed to the loss, deterioration, damage or destruction. Any actions that will involve the repair and restoration of any of the Collection and any other U.S. Government-owned personal property must be approved in advance and in writing by the Depositor.

i. Review and approve or deny requests for access to or short-term loan of the Collection (or a part thereof) for scientific, educational or religious uses in accordance with the regulation 36 CFR part 79 for the

curation of federally-owned and administered archeological collections and the terms and conditions stipulated in Attachment C of this Memorandum. In addition, refer requests for consumptive uses of the Collection (or a part thereof) to the Depositor for approval or denial.

j. Not mortgage, pledge, assign, repatriate, transfer, exchange, give, sublet, discard or part with possession of any of the Collection or any other U.S. Government-owned personal property in any manner to any third party either directly or in-directly without the prior written permission of the Depositor, and redirect any such request to the Depositor for response. In addition, not take any action whereby any of the Collection or any other U.S. Government-owned personal property shall or may be encumbered, seized, taken in execution, sold, attached, lost, stolen, destroyed or damaged.

2. The Depositor shall:

a. On or about (month, date and year), deliver or cause to be delivered to the Repository the Collection, as described in Attachment A, and any other U.S. Government-owned personal property, as described in Attachment B.

b. Assign as the Depositor's Representative having full authority with regard to this Memorandum, a person who meets pertinent professional qualifications.

c. Every (number of years) years, jointly with the Repository's designated representative, have the Depositor's Representative inspect and inventory the Collection and any other U.S. Government-owned personal property, and inspect the repository facility.

d. Review and approve or deny requests for consumptively using the Collection (or a part thereof).

3. Removal of all or any portion of the Collection from the premises of the Repository for scientific, educational or religious purposes may be allowed only in accordance with the regulation 36 CFR part 79 for the curation of federally-owned and administered archeological collections; the terms and conditions stipulated in Attachment C to this Memorandum; any conditions for handling, packaging and transporting the Collection; and other conditions that may be specified by the Repository to prevent breakage, deterioration and contamination.

4. The Collection or portions thereof may be exhibited, photographed or otherwise reproduced and studied in accordance with the terms and conditions stipulated in Attachment C to this Memorandum. All exhibits, reproductions and studies shall credit the Depositor, and read as follows: ''Courtesy of the (name of the Federal agency).'' The Repository agrees to provide the Depositor with copies of any resulting publications.

5. The Repository shall maintain complete and accurate records of the Collection and any other U.S. Government-owned personal property, including information on the study, use, loan and location of said Collection which has been removed from the premises of the Repository.

6. Upon execution by both parties, this Memorandum of Understanding shall be effective on this (day) day of (month and year), and shall remain in effect for (number of years) years, at which time it will be reviewed, revised, as necessary, and reaffirmed or terminated. This Memorandum may be revised or extended by mutual consent of both parties, or by issuance of a written amendment signed and dated by both parties. Either party may terminate this Memorandum by providing 90 days written notice. Upon termination, the Repository shall return such Collection and any other U.S. Government-owned personal property to the destination directed by the Depositor and in such manner to preclude breakage, loss, deterioration and contamination during handling, packaging and shipping, and in accordance with other conditions specified in writing by the Depositor. If the Repository terminates, or is in default of, this Memorandum, the Repository shall fund the packaging and transportation costs. If the Depositor terminates this Memorandum, the Depositor shall fund the packaging and transportation costs.

7. Title to the Collection being cared for and maintained under this Memorandum lies with the Federal Government.

In witness whereof, the Parties hereto have executed this Memorandum.

Signed: (signature of the Federal Agency Official)

Date: (date)

Signed: (signature of the Repository Official)

Date: (date)

Attachment A: Inventory of the Collection

Attachment B: Inventory of any other U.S. Government-owned Personal Property

Attachment C: Terms and Conditions Required by the Depositor

APPENDIX C TO PART 79—EXAMPLE OF A SHORT-TERM LOAN AGREEMENT FOR A FEDERALLY-OWNED COLLECTION

SHORT-TERM LOAN AGREEMENT
BETWEEN THE
(Name of the Repository)
AND THE
(Name of the Borrower)

The (name of the Repository), hereinafter called the Repository, agrees to loan to (name of the Borrower), hereinafter called the Borrower, certain artifacts, specimens and associated records, listed in Attachment A, which were collected from the (name of the prehistoric or historic resource) site which is assigned (list site number) site

number. The collection was recovered in connection with the (name of the Federal or federally authorized project) project, located in (name of the nearest city or town), (name of the county) county in the State of (name of the State). The Collection is the property of the U.S. Government.

The artifacts, specimens and associated records are being loaned for the purpose of (cite the purpose of the loan), beginning on (month, day and year) and ending on (month, day and year).

During the term of the loan, the Borrower agrees to handle, package and ship or transport the Collection in a manner that protects it from breakage, loss, deterioration and contamination, in conformance with the regulation 36 CFR part 79 for the curation of federally-owned and administered archeological collections and the terms and conditions stipulated in Attachment B to this loan agreement.

The Borrower agrees to assume full responsibility for insuring the Collection or for providing funds for the repair or replacement of objects that are damaged or lost during transit and while in the Borrower's possession. Within five (5) days of discovery, the Borrower will notify the Repository of instances and circumstances surrounding any loss of, deterioration and damage to, or destruction of the Collection and will, at the direction of the Repository, take steps to conserve damaged materials.

The Borrower agrees to acknowledge and credit the U.S. Government and the Repository in any exhibits or publications resulting from the loan. The credit line shall read as follows: ''Courtesy of the (names of the Federal agency and the Repository).'' The Borrower agrees to provide the Repository and the (name of the Federal agency) with copies of any resulting publications.

Upon termination of this agreement, the Borrower agrees to properly package and ship or transport the Collection to the Repository.

Either party may terminate this agreement, effective not less than (number of days) days after receipt by the other party of written notice, without further liability to either party.

Signed: (signature of the Repository Official)

Date: (date)

Signed: (signature of the Borrower)

Date: (date)

Attachment A: Inventory of the Objects being Loaned.

Attachment B: Terms and Conditions of the Loan.

PARTS 80–199 [RESERVED]

APPENDIX K

Archaeological Resources List

Fort A.P. Hill - Archaeological Sites List

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0005	Indeterminate	Trash Pit	18th-C, 1st quarter; Unknown Prehistoric	Recommended Potentially Eligible	0.220	44CE0005	21-Dec-1964
44CE0031	Domestic, Education, Religion	Church; School	18th-C; 19th-C; 20th-C; Unknown Prehistoric	Recommended Potentially Eligible	3.069	44CE0031	15-Nov-1979
44CE0032	Domestic	Camp	Unknown Prehistoric	Recommended Potentially Eligible	0.188	44CE0032	15-Nov-1979
44CE0039	Domestic	Dwelling, single	19th-C; 20th-C	Recommended Not Eligible	0.062	44CE0039	15-Nov-1979
44CE0040	Domestic	Dwelling, single	19th-C	Recommended Not Eligible	0.042	44CE0040	15-Nov-1979
44CE0041	Domestic	Trash scatter	20th-C	Recommended Not Eligible	0.089	44CE0041	15-Nov-1979
44CE0042	Domestic	Trash scatter	20th-C	Not Eligible (VDHR)	0.100	44CE0042	15-Nov-1979
44CE0043	Domestic	Dwelling, single	20th-C	Not Eligible (VDHR)	0.069	44CE0043	15-Nov-1979
44CE0044	Domestic	Dwelling, single	19th-C, 4th quarter; 20th-C, 1st half	Recommended Not Eligible	0.066	44CE0044	15-Nov-1979
44CE0045	Domestic	Trash scatter	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.079	44CE0045	15-Nov-1979
44CE0046	Domestic, Industry/Processing/Extract on	Dwelling, single; Mill	19th-C	Potentially Eligible (VDHR)	0.995	44CE0046	15-Nov-1979
44CE0047	Domestic	null	Unknown Prehistoric	Recommended Not Eligible	0.073	44CE0047	15-Nov-1979
44CE0048	Domestic, Government/Law/Polit cal	Post office; Tavern/Inn	18th-C; 20th-C	Not Eligible (VDHR)	0.248	44CE0048	15-Nov-1979
44CE0049	Domestic	null	18th-C	Potentially Eligible (VDHR)	0.112	44CE0049	15-Nov-1979
44CE0050	Domestic, Industry/Processing/Extract on	Iron furnace; associated structure	19th-C; Unknown Prehistoric	Potentially Eligible (VDHR)	0.158	44CE0050	15-Nov-1979
44CE0051	Domestic	Artifact scatter	20th-C	Recommended Not Eligible	0.057	44CE0051	15-Nov-1979
44CE0052	Domestic	null - Destroyed	19th-C	Not Eligible (VDHR)	0.064	44CE0052	15-Nov-1979
44CE0053	Domestic	null	19th-C; 20th-C	Not Eligible (VDHR)	0.068	44CE0053	15-Nov-1979
44CE0054	Domestic	null	19th-C; Middle Archaic	Not Eligible (VDHR)	0.062	44CE0054	15-Nov-1979
44CE0055	Domestic	null	19th-C; 20th-C; Middle Archaic; Woodland	Not Eligible (VDHR)	0.052	44CE0055	15-Nov-1979
44CE0056	Domestic	null	19th-C 20th-C	Not Eli ible VDHR	0.094	44CE0056	15-Nov-1979
44CE0057	Domestic	null	20th-C	Recommended Not Eligible	0.091	44CE0057	15-Nov-1979
44CE0058	Domestic	null - Destroyed	19th-C; 20th-C	Not Eligible (VDHR)	0.067	44CE0058	15-Nov-1979
44CE0059	Domestic	Camp	Woodland	Potentially Eligible (VDHR)	0.051	44CE0059	15-Nov-1979
44CE0060	Domestic	null	18th-C; 19th-C; 20th-C	Not Eligible (VDHR)	0.064	44CE0060	15-Nov-1979
44CE0061	Domestic, Indeterminate	Dwelling, single	18th-C; 19th-C	Potentially Eligible (VDHR)	0.149	44CE0061	15-Nov-1979
44CE0062	Domestic	Dwelling, single	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.063	44CE0062	15-Nov-1979
44CE0063	Indeterminate	null	Late Archaic; Late Woodland; Middle Woodland	Not Eligible (VDHR)	0.074	44CE0063	15-Nov-1979
44CE0064	Indeterminate	null	Early Archaic; Woodland	Not Eligible (VDHR)	0.056	44CE0064	15-Nov-1979
44CE0065	Indeterminate	null	19th-C; Unknown Prehistoric	Potentially Eligible (VDHR)	0.033	44CE0065	15-Nov-1979
44CE0066	Domestic	Camp	Middle Archaic; Woodland	Not Eligible (VDHR)	0.050	44CE0066	15-Nov-1979
44CE0067	Settlement Patterns; Domestic	Temporary camp; Trash Scatter	Early Archaic; Woodland; 20th-C	Not Eligible (VDHR)	0.083	44CE0067	15-Nov-1979
44CE0068	Domestic, Industry/Processing/Extract on	Camp; Lithic workshop	Unknown Prehistoric	Not Eligible (VDHR)	0.084	44CE0068	15-Nov-1979
44CE0069	Domestic	Camp	Middle Archaic	Not Eligible (VDHR)	0.037	44CE0069	15-Nov-1979
44CE0070	Domestic	Camp	Middle Archaic	Not Eligible (VDHR)	0.050	44CE0070	15-Nov-1979
44CE0071	Domestic	Camp	Archaic; Early/M ddle Woodland	Not Eligible (VDHR)	0.089	44CE0071	15-Nov-1979
44CE0072	Domestic	Tavern/Inn	18th-C	Not Eligible (VDHR)	0.112	44CE0072	15-Nov-1979

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0073	Indeterminate	null	Woodland	Not Eligible (VDHR)	0.055	44CE0073	15-Nov-1979
44CE0074	Indeterminate	null	Woodland	Recommended Potentially Eligible	0.125	44CE0074	15-Nov-1979
44CE0075	Domestic	Camp	19th-C; 20th-C; Unknown Prehistoric	Not Eligible (VDHR)	0.082	44CE0075	15-Nov-1979
44CE0076	Domestic	Dwelling, single	18th-C; 19th-C; 20th-C	Recommended Potentially Eligible	0.073	44CE0076	15-Nov-1979
44CE0077	Technology/Engineering	Kiln, brick	19th-C	Recommended Potentially Eligible	0.121	44CE0077	15-Nov-1979
44CE0078	Domestic	Other	19th-C, 2nd half; 20th-C	Recommended Not Eligible	0.095	44CE0078	15-Nov-1979
44CE0079	Domestic	null	20th-C	Not Eligible (VDHR)	0.088	44CE0079	15-Nov-1979
44CE0080	Domestic	Camp, temporary	Unknown Prehistoric	Not Eligible (VDHR)	0.071	44CE0080	15-Nov-1979
44CE0081	Domestic	Other	19th-C, 20th-C	Not Eligible (VDHR)	0.116	44CE0081	15-Nov-1979
44CE0082	Indeterminate	null	19th-C; 20th-C	Not Eligible (VDHR)	0.109	44CE0082	15-Nov-1979
44CE0083	Religion	Church	19th-C	Not Eligible (VDHR)	0.300	44CE0083	15-Nov-1979
44CE0084	Domestic	Tavern/Inn	19th-C	Potentially Eligible (VDHR)	0.132	44CE0084	15-Nov-1979
44CE0085	Domestic	Farmstead	19th-C	Recommended Potentially Eligible	0.217	44CE0085	15-Nov-1979
44CE0086	Domestic	Farmstead	19th-C; 20th-C	Recommended Potentially Eligible	0.084	44CE0086	15-Nov-1979
44CE0087	Domestic	Farmstead	19th-C; 20th-C	Not Eligible (VDHR)	0.071	44CE0087	15-Nov-1979
44CE0110	Domestic	Dwelling, single; Outbuilding	18th-C; 20th-C	Eligible (VDHR)	1.198	44CE0110	10-Jun-1983
44CE0115	Indeterminate	null	Archaic	Potentially Eligible (VDHR)	0.085	44CE0115	10-Jun-1983
44CE0116	Indeterminate	null	19th-C; 20th-C	Not Eligible (VDHR)	0.122	44CE0116	10-Jun-1983
44CE0117	Indeterminate	null	Early Archaic	Not Eligible (VDHR)	0.050	44CE0117	10-Jun-1983
44CE0118	Indeterminate	null	Middle Archaic	Recommended Not Eligible	0.126	44CE0118	10-Jun-1983
44CE0119	Domestic	Other	18th-C	Recommended Potentially Eligible	0.030	44CE0119	10-Jun-1983
44CE0120	Domestic	Other	18th-C	Recommended Potentially Eligible	0.028	44CE0120	10-Jun-1983
44CE0121	Domestic	Dwelling, single	19th-C, 2nd half	Recommended Not Eligible	0.120	44CE0121	10-Jun-1983
44CE0122	Domestic	Other	19th-C, 4th quarter	Recommended Not Eligible	0.086	44CE0122	10-Jun-1983
44CE0123	Domestic	Farmstead	19th-C	Potentially Eligible (VDHR)	0.077	44CE0123	4-Apr-1983
44CE0124	Indeterminate	null	Unknown Prehistoric	**Recommended Not Eligible**	0.117	44CE0124	10-Jun-1983
44CE0125	Indeterminate	null	19th-C	Not Eligible (VDHR)	0.068	44CE0125	10-Jun-1983
44CE0126	Indeterminate	null	Unknown Prehistoric	Not Eligible (VDHR)	0.070	44CE0126	10-Jun-1983
44CE0127	Indeterminate	null	Unknown Prehistoric	**Recommended Not Eligible**	0.075	44CE0127	10-Jun-1983
44CE0128	Domestic	Other	19th-C, 2nd half; 20th-C	**Recommended Not Eligible**	0.043	44CE0128	10-Jun-1983
44CE0129	Domestic	Other	19th-C, 2nd half	**Recommended Not Eligible**	0.079	44CE0129	10-Jun-1983
44CE0130	Domestic	Other	19th-C, 2nd half; 20th-C	Not Eligible (VDHR)	0.076	44CE0130	10-Jun-1983
44CE0131	Domestic	Other	19th-C, 2nd half	**Recommended Not Eligible**	0.056	44CE0131	10-Jun-1983
44CE0132	Domestic	Dwelling, single	19th-C; 20th-C	Potentially Eligible (VDHR)	0.103	44CE0132	10-Jun-1983
44CE0138	Indeterminate	null	Woodland	Recommended Potentially Eligible	0.020	44CE0138	?
44CE0275	Domestic, Indeterminate	Camp, temporary	19th-C, 2nd half; 20th-C, 1st half; Unknown Prehistoric	Not Eligible (VDHR)	0.032	44CE0275	25-Nov-1992
44CE0276	Domestic	Camp, temporary	Unknown Prehistoric	Not Eligible (VDHR)	0.036	44CE0276	25-Nov-1992
44CE0277	Indeterminate	Other	Unknown Histor c	Not Eligible (VDHR)	0.071	44CE0277	25-Nov-1992
44CE0278	Domestic	Trash pit	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.102	44CE0278	25-Nov-1992
44CE0279	Domestic	Camp, temporary	Early Archaic	Not Eligible (VDHR)	0.087	44CE0279	25-Nov-1992

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0280	Industry/Processing/Extract on, Mil tary/Defense	Lith c workshop	20th-C; Unknown Prehistoric	Not Eligible (VDHR)	0.076	44CE0280	25-Nov-1992
44CE0281	Domestic	Trash pit	20th-C	Not Eligible (VDHR)	0.165	44CE0281	25-Nov-1992
44CE0282	Domestic	Trash pit	20th-C	Not Eligible (VDHR)	0.052	44CE0282	25-Nov-1992
44CE0289	Domestic, Indeterminate	Farmstead	19th-C; Unknown Prehistor c	Recommended Potentially Eligible	0.127	44CE0289	26-Dec-1994
44CE0290	Domestic, Indeterminate	Farmstead	19th-C; Unknown Prehistor c	Recommended Potentially Eligible	0.031	44CE0290	26-Dec-1994
44CE0291	Domestic, Indeterminate	Farmstead	19th-C; 20th-C	Recommended Potentially Eligible	0.044	44CE0291	26-Dec-1994
44CE0292	Domestic, Indeterminate	Farmstead	19th-C; Unknown Prehistoric	Not Eligible (VDHR)	2.700	44CE0292	26-Dec-1994
44CE0293	Domestic	null	Woodland	Not Eligible (VDHR)	2.700	44CE0293	26-Dec-1994
44CE0294	Domestic	Farmstead	19th-C	Potentially Eligible (VDHR)	0.138	44CE0294	26-Dec-1994
44CE0295	Domestic	Camp	Woodland	Not Eligible (VDHR)	0.059	44CE0295	26-Dec-1994
44CE0296	Indeterminate	null	Unknown Prehistoric	Not Eligible (VDHR)	0.055	44CE0296	26-Dec-1994
44CE0297	Indeterminate	null	Unknown Historic; Unknown Prehistor c	Recommended Not Eligible	0.106	44CE0297	26-Dec-1994
44CE0298	Domestic	Farmstead	18th-C; 19th-C	Recommended Potentially Eligible	0.065	44CE0298	26-Dec-1994
44CE0299	Indeterminate	null	Unknown Prehistoric	Not Eligible (VDHR)	0.074	44CE0299	26-Dec-1994
44CE0300	Indeterminate	Other	19th-C; Unknown Prehistoric	Potentially Eligible (VDHR)	1.450	44CE0300	26-Dec-1994
44CE0301	Domestic	Camp; Farmstead	19th-C; 20th-C; Unknown Prehistoric	Potentially Eligible (VDHR)	0.069	44CE0301	26-Dec-1994
44CE0302	Domestic	Camp	Unknown Prehistoric	Not Eligible (VDHR)	0.053	44CE0302	26-Dec-1994
44CE0303	Domestic	Camp	Unknown Prehistoric	Potentially Eligible (VDHR)	0.123	44CE0303	26-Dec-1994
44CE0304	Domestic	Camp	Unknown Prehistoric	Not Eligible (VDHR)	0.082	44CE0304	26-Dec-1994
44CE0305	Domestic	Camp	Unknown Prehistoric	Recommended Potentially Eligible	0.705	44CE0305	26-Dec-1994
44CE0306	Domestic	Camp	Unknown Prehistoric	Not Eligible (VDHR)	0.146	44CE0306	26-Dec-1994
44CE0307	Domestic	Farmstead	19th-C	Not Eligible (VDHR)	0.102	44CE0307	26-Dec-1994
44CE0323	Mil tary/Defense	Camp	Civil War 1862-1863	Potentially Eligible (VDHR)	4.143	44CE0323	10-Jun-1998
44CE0324	Technology/Engineering	Kiln, brick	Unknown Historic	Potentially Eligible (VDHR)	0.032	44CE0324	10-Jun-1998
44CE0325	Mil tary/Defense	Earthworks	19th-C, 3rd quarter	Eligible (VDHR)	0.200	44CE0325	13-Jun-1998
44CE0326	Funerary	Cemetery	18th-C, 2nd half; 19th-C, 1st half	Eligible (VDHR)	0.148	44CE0326	13-Jun-1998
44CE0327	Domestic	null	19th-C, 1st quarter	Potentially Eligible (VDHR)	0.062	44CE0327	13-Jun-1998
44CE0328	Domestic	null	19th-C; 20th-C	Not Eligible (VDHR)	0.086	44CE0328	13-Jun-1998
44CE0329	Domestic	Dwelling, single	19th-C, 2nd half; 20th-C	Not Eligible (VDHR)	0.233	44CE0329	13-Jun-1998
44CE0330	Domestic	Camp, temporary	Unknown Prehistoric	Not Eligible (VDHR)	0.075	44CE0330	13-Jun-1998
44CE0335	null	null	19th-C	Recommended Not Eligible	0.153	44CE0335	22-Sep-2000
44CE0336	Education	School	20th-C, 1st half	Recommended Not Eligible	0.062	44CE0336	22-Sep-2000
44CE0337	Domestic	Farmstead	19th-C, 1st half; 20th-C, 1st half	Recommended Potentially Eligible	0.019	44CE0337	22-Sep-2000
44CE0338	Domestic	Other	19th-C; 20th-C	Recommended Potentially Eligible	0.033	44CE0338	22-Sep-2000
44CE0339	Domestic	Farmstead	18th-C; 20th-C, 1st half	Recommended Not Eligible	0.057	44CE0339	22-Sep-2000
44CE0340	Domestic	Farmstead	19th-C; 20th-C, 1st half	Recommended Not Eligible	0.058	44CE0340	22-Sep-2000
44CE0341	Domestic	Farmstead	20th-C, 1st quarter	Recommended Not Eligible	0.060	44CE0341	22-Sep-2000
44CE0342	Settlement Patterns	Camp	Unknown Prehistoric	Recommended Not Eligible	0.033	44CE0342	22-Sep-2000
44CE0343	Settlement Patterns	Camp	Woodland	Not Eligible (VDHR)	0.025	44CE0343	22-Sep-2000
44CE0344	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	0.060	44CE0344	22-Sep-2000

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0345	Settlement Patterns	Other	Unknown Histor c	Recommended Potentially Eligible	0.060	44CE0345	22-Sep-2000
44CE0346	Mil tary/Defense	Privy	19th-C, 3rd quarter	Recommended Potentially Eligible	0.060	44CE0346	22-Sep-2000
44CE0347	Indeterminate	null	19th-C; Unknown Prehistoric	Recommended Potentially Eligible	0.060	44CE0347	22-Sep-2000
44CE0348	Domestic	Dwelling, single	19th-C	Not Eligible (VDHR)	0.060	44CE0348	22-Sep-2000
44CE0349	Mil tary/Defense	Camp	19th-C, 3rd quarter; Unknown Prehistoric	Recommended Potentially Eligible	0.680	44CE0349	22-Sep-2000
44CE0350	Domestic	Dwelling, single	19th-C, 2nd half; 20th-C, 1st half; Unknown Prehistoric	Potentially Eligible (VDHR)	0.232	44CE0350	22-Sep-2000
44CE0351	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.211	44CE0351	22-Sep-2000
44CE0352	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.060	44CE0352	22-Sep-2000
44CE0353	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.060	44CE0353	22-Sep-2000
44CE0354	Domestic	Dwelling, single	20th-C, 1st half	Potentially Eligible (VDHR)	0.060	44CE0354	22-Sep-2000
44CE0355	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.381	44CE0355	22-Sep-2000
44CE0356	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.491	44CE0356	22-Sep-2000
44CE0357	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.060	44CE0357	22-Sep-2000
44CE0358	Domestic, Funerary	null	Unknown Histor c	Potentially Eligible (VDHR)	0.087	44CE0358	22-Sep-2000
44CE0359	Domestic	Farmstead	20th-C	Not Eligible (VDHR)	0.500	44CE0359	22-Sep-2000
44CE0360	Domestic	Dwelling, single	20th-C, 1st half	Not Eligible (VDHR)	0.300	44CE0360	22-Sep-2000
44CE0361	Domestic	Dwelling, single	20th-C, 1st half	Not Eligible (VDHR)	0.206	44CE0361	22-Sep-2000
44CE0362	Domestic	Dwelling, single	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.486	44CE0362	22-Sep-2000
44CE0363	Domestic, Military/Defense	Dwelling, single; Mil tary camp	19th-C	Potentially Eligible (VDHR)	0.226	44CE0363	22-Sep-2000
44CE0364	Settlement Patterns	Lith c scatter; Trash scatter	Early Woodland; 19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.383	44CE0364	22-Sep-2000
44CE0365	Domestic	Dwellin, sin le	20th-C, 1st half	Not Eli ible VDHR,	[illegible]	[illegible]	[illegible]
44CE0366	Domestic	Dwelling, single	18th-C, 2nd half; 19th-C	Potentially Eligible (VDHR)	0.345	44CE0366	22-Sep-2000
44CE0367	Domestic	Other	Unknown Histor c	Not Eligible (VDHR)	0.060	44CE0367	22-Sep-2000
44CE0368	Domestic	Dwelling, single	19th-C	Not Eligible (VDHR)	0.120	44CE0368	22-Sep-2000
44CE0369	Domestic	Dwelling, single	20th-C, 1st half	Not Eligible (VDHR)	0.064	44CE0369	22-Sep-2000
44CE0370	Other	null	Unknown Historic	Not Eligible (VDHR)	0.060	44CE0370	22-Sep-2000
44CE0371	Domestic	Dwelling, single	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.060	44CE0371	22-Sep-2000
44CE0372	Domestic	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.239	44CE0372	22-Sep-2000
44CE0373	Domestic	Dwelling, single	19th-C, 1st half	Recommended Potentially Eligible	0.060	44CE0373	22-Sep-2000
44CE0374	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.060	44CE0374	22-Sep-2000
44CE0375	Domestic	Dwelling, single	Unknown Histor c	Recommended Potentially Eligible	0.060	44CE0375	22-Sep-2000
44CE0376	Domestic	Trash scatter	19th-C, 3rd quarter; 20th-C, 1st quarter	Recommended Not Eligible	0.060	44CE0376	22-Sep-2000
44CE0377	Domestic, Settlement Patterns	Camp; Trash scatter	Unknown Histor c; Unknown Prehistor c	Recommended Not Eligible	0.060	44CE0377	22-Sep-2000
44CE0378	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	2.631	44CE0378	22-Sep-2000
44CE0379	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	0.978	44CE0379	22-Sep-2000
44CE0380	Domestic	Dwelling, single	19th-C, 2nd half; 20th-C	Recommended Not Eligible	0.060	44CE0380	22-Sep-2000
44CE0381	Domestic	Dwelling, single	19th-C, 2nd half; 20th-C, 1st half	Recommended Not Eligible	0.060	44CE0381	22-Sep-2000
44CE0382	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.379	44CE0382	22-Sep-2000
44CE0383	Domestic	Dwelling, single	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.316	44CE0383	22-Sep-2000

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0384	Domestic	Dwelling, single	20th-C	Recommended Not Eligible	0.263	44CE0384	22-Sep-2000
44CE0385	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	0.085	44CE0385	22-Sep-2000
44CE0386	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Eligible (VDHR)	12.280	44CE0386	22-Sep-2000
44CE0387	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.797	44CE0387	22-Sep-2000
44CE0388	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.452	44CE0388	22-Sep-2000
44CE0389	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	1.463	44CE0389	22-Sep-2000
44CE0390	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.164	44CE0390	22-Sep-2000
44CE0391	Transportation/Commun cation	Road	18th-C	Not Eligible (VDHR)	1.380	44CE0391	22-Sep-2000
44CE0392	Indeterminate	Other	19th-C	Recommended Potentially Eligible	0.132	44CE0392	22-Sep-2000
44CE0393	Domestic, Transportation/Commun cation	Road; Well	18th-C; 19th-C	Not Eligible (VDHR)	8.700	44CE0393	22-Sep-2000
44CE0394	Domestic	Dwelling, single	20th-C, 1st half	Recommended Not Eligible	0.204	44CE0394	22-Sep-2000
44CE0395	Indeterminate	null	19th-C	Recommended Potentially Eligible	0.204	44CE0395	22-Sep-2000
44CE0396	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	0.060	44CE0396	22-Sep-2000
44CE0397	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	0.060	44CE0397	22-Sep-2000
44CE0398	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	0.634	44CE0398	22-Sep-2000
44CE0399	Domestic, Military/Defense	Dwelling, single; Mil tary camp	19th-C, 3rd quarter; 20th-C	Recommended Potentially Eligible	0.060	44CE0399	22-Sep-2000
44CE0400	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	0.272	44CE0400	22-Sep-2000
44CE0401	Domestic	Dwelling, single	20th-C	Not Eligible (VDHR)	0.095	44CE0401	22-Sep-2000
44CE0402	Mil tary/Defense	Mil tary camp	18th-C,3rd quarter;19th-C,3rd quarter;20th-C	Eligible (VDHR)	0.430	44CE0402	22-Sep-2000
44CE0403	Indeterminate	null	Civil War 1862-1863	Potentially Eligible (VDHR)	0.121	44CE0403	22-Sep-2000
44CE0404	Domestic	Ice house	Unknown Histor c	Potentially Eligible (VDHR)	0.044	44CE0404	22-Sep-2000
44CE0405	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	0.152	44CE0405	22-Sep-2000
44CE0406	Mil tary/Defense	Mil tary camp	Civil War 1862-1863	Recommended Potentially Eligible	0.040	44CE0406	22-Sep-2000
44CE0407	Mil tary/Defense	Mil tary camp	19th-C, 3rd quarter	Recommended Potentially Eligible	0.146	44CE0407	22-Sep-2000
44CE0408	Domestic	Dwelling, single	19th-C, 4th quarter	Recommended Not Eligible	0.072	44CE0408	22-Sep-2000
44CE0409	Domestic	Ice house	19th-C	Potentially Eligible (VDHR)	0.064	44CE0409	22-Sep-2000
44CE0410	Domestic	Well	Unknown Histor c	Recommended Potentially Eligible	0.071	44CE0410	22-Sep-2000
44CE0411	Domestic	Well	20th-C	Recommended Potentially Eligible	0.036	44CE0411	22-Sep-2000
44CE0412	Domestic	null	18th-C; 20th-C	Recommended Potentially Eligible	0.517	44CE0412	22-Sep-2000
44CE0413	Domestic	Dwelling, single	19th-C; 20th-C	Recommended Not Eligible	0.124	44CE0413	22-Sep-2000
44CE0414	Domestic	Farmstead	19th-C	Recommended Not Eligible	0.099	44CE0414	22-Sep-2000
44CE0415	Domestic	Dwelling, single	20th-C	Recommended Not Eligible	0.105	44CE0415	22-Sep-2000
44CE0416	Domestic	Farmstead	18th-C; 19th-C	Recommended Not Eligible	0.124	44CE0416	22-Sep-2000
44CE0417	Mil tary/Defense	Mil tary camp	20th-C	Recommended Not Eligible	0.164	44CE0417	22-Sep-2000
44CE0418	Domestic	Dwelling, single	20th-C	Recommended Not Eligible	0.119	44CE0418	22-Sep-2000
44CE0419	Domestic	null	Unknown Histor c	Recommended Potentially Eligible	0.121	44CE0419	22-Sep-2000
44CE0420	Settlement Patterns	Dwelling, single	19th-C, 4th quarter; 20th-C, 1st quarter	*Recommended Potentially Eligible*	0.071	44CE0420	22-Sep-2000
44CE0421	Settlement Patterns	Dwelling, single	19th-C, 4th quarter; 20th-C, 1st quarter	*Recommended Potentially Eligible*	0.065	44CE0421	22-Sep-2000
44CE0422	Mil tary/Defense	Earthworks	19th-C, 3rd quarter	Recommended Potentially Eligible	0.260	44CE0422	22-Sep-2000
44CE0423	Mil tary/Defense	Earthworks	19th-C, 3rd quarter	*Recommended Potentially Eligible*	0.108	44CE0423	22-Sep-2000

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0424	Mil tary/Defense	Earthworks	19th-C, 3rd quarter	*Recommended Potentially Eligible*	0.086	44CE0424	22-Sep-2000
44CE0425	Settlement Patterns	Farmstead	19th-C, 4th quarter; 20th-C, 1st quarter	Not Eligible (VDHR)	0.458	44CE0425	15-Dec-2002
44CE0426	Mil tary/Defense	Earthworks	Civil War 1862-1863	Potentially Eligible (VDHR)	0.368	44CE0426	15-Dec-2002
44CE0427	Settlement Patterns	Camp	Woodland	Potentially Eligible (VDHR)	0.137	44CE0427	15-Dec-2002
44CE0428	Settlement Patterns	Farmstead	19th-C, 2nd/3rd quarter	Not Eligible (VDHR)	0.483	44CE0428	15-Dec-2002
44CE0429	Domestic	Dwelling, single	19th-C, 4th quarter	Potentially Eligible (VDHR)	0.500	44CE0429	1-Jan-2003
44CE0430	Domestic	Dwelling, single - Destroyed	19th-C, 4th quarter	Not Eligible (VDHR)	0.110	44CE0430	1-Jan-2003
44CE0431	Domestic	Dwelling, single	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	2.500	44CE0431	12-Mar-2004
44CE0432	Domestic	Trash scatter	19th-C; 20th-C	Not Eligible (VDHR)	0.570	44CE0432	1-Jun-2004
44CE0448	Domestic, Subsistence/Agriculture	Dwelling, single; Farmstead	19th-C; 20th-C, 1st quarter	Recommended Potentially Eligible	4.600	44CE0448	1-Nov-2005
44CE0449	Domestic	Dwelling, single	20th-C	Recommended Not Eligible	2.880	44CE0449	1-Nov-2005
44CE0462	Domestic	Dwelling, single	20th-C, 1st half	Not Eligible (VDHR)	4.000	44CE0462	3-Feb-2006
44CE0463	Domestic	Dwelling, single	19th-C, 1st half	Potentially Eligible (VDHR)	0.680	44CE0463	3-Feb-2006
44CE0464	Domestic	Dwelling, multiple	20th-C, 1st half	Not Eligible (VDHR)	4.500	44CE0464	3-Mar-2006
44CE0465	Settlement Patterns	Camp	Early/Middle Woodland	Not Eligible (VDHR)	4.000	44CE0465	3-Mar-2006
44CE0466	Domestic	Farmstead	20th-C	Not Eligible (VDHR)	5.600	44CE0466	4-Apr-2006
44CE0467	Settlement Patterns	Lith c scatter	Unknown Prehistoric	Not Eligible (VDHR)	0.120	44CE0467	3-Mar-2006
44CE0468	Domestic	Farmstead	19th-C	Not Eligible (VDHR)	3.000	44CE0468	3-Mar-2006
44CE0469	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.100	44CE0469	5-Dec-2006
44CE0470	Domestic	Dwelling, single	20th-C, 1st half	Potentially Eligible (VDHR)	0.100	44CE0470	5-Dec-2006
44CE0471	Domestic	Dwelling, single	19th-C, 4th quarter; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0471	5-Dec-2006
44CE0472	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	23.500	44CE0472	5-Dec-2006
44CE0473	Funerary	Family Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0473	5-Dec-2006
44CE0474	Funerary	Family Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0474	5-Dec-2006
44CE0475	Funerary	Family Cemetery	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.500	44CE0475	5-Dec-2006
44CE0476	Domestic	Farmstead	18th-C, 4th quarter; 19th-C, 1st half	Potentially Eligible (VDHR)	2.800	44CE0476	5-Jan-2007
44CE0477	Domestic	Trash scatter	19th-C; 20th-C	Not Eligible (VDHR)	0.200	44CE0477	5-Jan-2007
44CE0478	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	2.230	44CE0478	7-Nov-2006
44CE0479	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	1.560	44CE0479	12-Nov-2006
44CE0480	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	0.770	44CE0480	24-Apr-2006
44CE0481	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	0.180	44CE0481	11-Apr-2006
44CE0482	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	0.060	44CE0482	17-Nov-2006
44CE0483	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	0.440	44CE0483	20-Nov-2006
44CE0484	Settlement Patterns	Camp, temporary	Unknown Prehistoric	Not Eligible (VDHR)	0.060	44CE0484	1-Nov-2006
44CE0485	Settlement Patterns	Lith c scatter	Unknown Prehistoric	Not Eligible (VDHR)	0.890	44CE0485	15-Mar-2006
44CE0486	Settlement Patterns	Lith c scatter	Unknown Prehistoric	Not Eligible (VDHR)	0.080	44CE0486	15-Mar-2006
44CE0487	Domestic	Trash scatter	19th-C	Not Eligible (VDHR)	0.670	44CE0487	8-Mar-2006
44CE0488	Domestic	Dwelling, single	18th-C; 19th-C	Eligible (VDHR)	0.890	44CE0488	20-Mar-2006
44CE0489	Mil tary/Defense	Trench, Camp	19th-C, 2nd half	Eligible (VDHR)	11.500	44CE0489	9-Jun-2006
44CE0490	Domestic, Military/Defense	Dwelling, single; Camp	19th-C, 2nd half; 20th-C	Eligible (VDHR)	10.350	44CE0490	26-Apr-2006

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0491	Settlement Patterns	Camp, temporary	Woodland	Not Eligible (VDHR)	0.220	44CE0491	26-Apr-2006
44CE0492	Transportation/Commun cation	Road bed	19th-C; 20th-C	Not Eligible (VDHR)	1.500	44CE0492	9-May-2006
44CE0493	Domestic	Trash scatter	18th-C; 19th-C	Not Eligible (VDHR)	0.500	44CE0493	28-Dec-2006
44CE0494	Indeterminate	Trash scatter	19th-C; 20th-C	Not Eligible (VDHR)	1.780	44CE0494	20-Dec-2006
44CE0495	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	0.500	44CE0495	18-Nov-2006
44CE0496	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	0.500	44CE0496	4-Dec-2006
44CE0497	Indeterminate	Trash scatter	19th-C, 4th quarter; 20th-C, 1st quarter; Unknown P	Not Eligible (VDHR)	0.840	44CE0497	25-Nov-2006
44CE0498	Other	Trash scatter	18th-C; 19th-C	Not Eligible (VDHR)	0.500	44CE0498	26-Nov-2006
44CE0499	Domestic	Dwelling, single	19th-C; 20th-C; Unknown Prehistoric	Not Eligible (VDHR)	2.500	44CE0499	20-Feb-2006
44CE0500	Settlement Patterns	Camp, temporary	Unknown Prehistoric	Not Eligible (VDHR)	0.230	44CE0500	24-Nov-2006
44CE0503	Mil tary/Defense	Mil tary facil ty	20th-C	Not Eligible (VDHR)	0.060	44CE0503	14-Mar-2006
44CE0504	Domestic	Dwelling, single	19th-C, 4th quarter; 20th-C	Not Eligible (VDHR)	0.060	44CE0504	14-Mar-2006
44CE0505	Mil tary/Defense	Earthworks	19th-C	Eligible (VDHR)	0.860	44CE0505	14-Mar-2006
44CE0506	Mil tary/Defense	Earthworks?	19th-C; 20th-C	Not Eligible (VDHR)	0.030	44CE0506	14-Mar-2006
44CE0507	Domestic	Farmstead	19th-C; 20th-C	Not Eligible (VDHR)	0.230	44CE0507	14-Mar-2006
44CE0508	Domestic, Other	Dwelling, single, Lithic sca	19th-C, 4th quarter; 20th-C, 1st half; Unknown Preh	Not Eligible (VDHR)	0.520	44CE0508	14-Mar-2006
44CE0509	Mil tary/Defense	Earthworks	20th-C	Not Eligible (VDHR)	0.060	44CE0509	14-Mar-2006
44CE0510	Education	School, Privy	20th-C, 1st half	Not Eligible (VDHR)	0.060	44CE0510	14-Mar-2006
44CE0511	Mil tary/Defense	Earthworks	19th-C, 2nd half; 20th-C	Not Eligible (VDHR)	0.580	44CE0511	14-Mar-2006
44CE0512	Mil tary/Defense	Earthworks - Rifle p ts	20th-C	Not Eligible (VDHR)	0.040	44CE0512	14-Mar-2006
44CE0513	Mil tary/Defense	Quonset hut/bunker	20th-C	Not Eligible (VDHR)	0.060	44CE0513	14-Mar-2006
44CE0514	Mil tary/Defense	Earthworks - Berm	20th-C	Not Eligible (VDHR)	0.580	44CE0514	14-Mar-2006
[illegible]	[illegible]	[illegible]	[illegible]	Not Eligible (VDHR)	[illegible]	44[illegible]1[illegible]	[illegible]
44CE0516	Domestic	Dwelling, single	19th-C, 4th quarter; 20th-C, 1st quarter	Not Eligible (VDHR)	1.000	44CE0516	14-Mar-2006
44CE0517	Mil tary/Defense	Quonset hut	20th-C, 2nd half	Not Eligible (VDHR)	0.020	44CE0517	14-Mar-2006
44CE0518	Domestic	Trash scatter	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	2.000	44CE0518	14-Mar-2006
44CE0519	Domestic	Trash scatter	19th-C	?	3.700	44CE0519	20-Feb-2006
44CE0520	Domestic	Trash scatter	19th-C	?	1.000	44CE0520	20-Feb-2006
44CE0521	Domestic	Dwelling, single	19th-C; 20th-C	Not Eligible (VDHR)	1.400	44CE0521	20-Feb-2006
44CE0524	Mil tary/Defense	Concrete piers	20th-C, 1st half	Not Eligible (VDHR)	0.050	44CE0524	22-Oct-2007
44CE0525	Domestic	Farmstead	19th-C	Potentially Eligible (VDHR)	0.860	44CE0525	31-Oct-2007
44CE0526	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Potentially Eligible (VDHR)	0.750	44CE0526	7-Nov-2007
44CE0527	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0527	19-Nov-2007
44CE0528	Funerary	Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0528	4-Dec-2007
44CE0529	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0529	23-Jan-2008
44CE0530	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.450	44CE0530	18-Jan-2008
44CE0531	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.400	44CE0531	18-Jan-2008
44CE0532	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0532	18-Jan-2008
44CE0533	Mil tary/Defense	Mil tary facil ty	20th-C, 1st half	Not Eligible (VDHR)	0.030	44CE0533	24-Jan-2008
44CE0534	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.400	44CE0534	29-Jan-2008
44CE0535	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.050	44CE0535	29-Jan-2008

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0536	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.170	44CE0536	30-Jan-2008
44CE0537	Domestic, Funerary	Farmstead, Cemetery	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.050	44CE0537	7-Feb-2008
44CE0538	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.300	44CE0538	30-Jan-2008
44CE0539	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.700	44CE0539	30-Jan-2008
44CE0540	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0540	2-Jan-2008
44CE0541	Funerary	Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.100	44CE0541	18-Jan-2008
44CE0542	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.150	44CE0542	29-Jan-2008
44CE0543	Funerary	Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0543	8-Feb-2008
44CE0544	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0544	31-Jan-2008
44CE0545	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.400	44CE0545	6-Feb-2008
44CE0546	Domestic	Dwelling, single	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.010	44CE0546	6-Feb-2008
44CE0547	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	1.000	44CE0547	11-Feb-2008
44CE0548	Domestic	Farmstead	20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0548	27-Feb-2008
44CE0549	Mil tary/Defense	Mil tary facil ty	20th-C, 1st half	Not Eligible (VDHR)	0.100	44CE0549	26-Feb-2008
44CE0550	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	1.500	44CE0550	27-Feb-2008
44CE0551	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	1.400	44CE0551	9-Apr-2008
44CE0552	Domestic	Farmstead	19th-C; 20th-C, 1st half	?	0.500	44CE0552	10-Apr-2008
44CE0553	Industry/Processing/Extract on, Domestic, Funerary	Br ck kiln, Farmstead, Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0553	10-Apr-2008
44CE0554	Domestic, Funerary	Farmstead, Cemetery	19th-C; 20th-C, 1st half		0.500	44CE0554	10-Apr-2008
44CE0555	Domestic	Trash pit	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0555	10-Apr-2008
44CE0556	Domestic	Artifact scatter	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.100	44CE0556	18-Apr-2008
44CE0557	Domestic	Farmstead	18th-C; 19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.900	44CE0557	24-Mar-2008
44CE0558	Domestic	Farmstead	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.900	44CE0558	24-Mar-2008
44CE0559	Domestic	Farmstead	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.200	44CE0559	24-Mar-2008
44CE0560	Domestic	Farmstead	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.600	44CE0560	24-Mar-2008
44CE0561	Settlement Patterns	Artifact scatter	Unknown Prehistoric	Not Eligible (VDHR)	0.100	44CE0561	24-Mar-2008
44CE0562	Domestic	Farmstead	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.900	44CE0562	24-Mar-2008
44CE0563	Mil tary/Defense	Mil tary facil ty	20th-C	Recommended Not Eligible	0.250	44CE0563	21-Mar-2008
44CE0564	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.600	44CE0564	27-May-2008
44CE0565	Mil tary/Defense	Earthworks	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.400	44CE0565	27-May-2008
44CE0566	Funerary	Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.600	44CE0566	11-Aug-2008
44CE0567	Funerary	Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0567	13-Aug-2008
44CE0568	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0568	20-Aug-2008
44CE0569	Domestic	Trash scatter	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.250	44CE0569	25-Aug-2008
44CE0570	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.200	44CE0570	6-Jun-2008
44CE0571	Funerary	Cemetery	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.020	44CE0571	6-Jun-2008
44CE0572	Industry/Processing/Extract on, Mil tary/Defense	Warehouse, Military facil ty	20th-C, 1st half	Not Eligible (VDHR)	0.030	44CE0572	6-Jun-2008
44CE0573	Domestic	Farmstead	20th-C, 1st half	Potentially Eligible (VDHR)	0.600	44CE0573	10-Aug-2008
44CE0574	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.100	44CE0574	9-Sep-2008
44CE0575	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.300	44CE0575	10-Sep-2008

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44CE0576	Mil tary/Defense, Domest c	Mil tary base/facility, Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.100	44CE0576	10-Sep-2008
44CE0577	Mil tary/Defense	Mil tary facil ty	20th-C, 1st half	Not Eligible (VDHR)	0.600	44CE0577	10-Sep-2008
44CE0578	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.130	44CE0578	18-Sep-2008
44CE0579	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.130	44CE0579	18-Sep-2008
44CE0581	Domestic +	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.230	44CE0581	6-Nov-2008
44CE0582	Domestic +	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.400	44CE0582	7-Nov-2008
44CE0583	Domestic +	Farmstead, Trash scatter	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.390	44CE0583	22-Nov-2008
44CE0584	Domestic +	Farmstead, Trash scatter	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.290	44CE0584	22-Nov-2008
44CE0585	Domestic +	Farmstead, Trash scatter	19th-C, 1st half	Not Eligible (VDHR)	0.200	44CE0585	23-Nov-2008
44CE0586	Domestic +	Farmstead, Trash scatter	20th-C, 1st half	Potentially Eligible (VDHR)	1.250	44CE0586	23-Nov-2008
44CE0587	Domestic	Trash scatter	20th-C, 1st half	Not Eligible (VDHR)	0.170	44CE0587	23-Nov-2008
44CE0588	Domestic +	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.050	44CE0588	24-Nov-2008
44CE0589	Domestic +	Farmstead, Trash scatter	20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0589	24-Nov-2008
44CE0590	Domestic +	Farmstead, Trash scatter	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.300	44CE0590	2-Nov-2008
44CE0591	Domestic +	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	1.980	44CE0591	1-Nov-2008
44CE0592	Domestic +	Farmstead, Trash scatter	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.080	44CE0592	27-Oct-2008
44CE0593	Domestic +	Trash scatter, Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.130	44CE0593	29-Oct-2008
44CE0594	Domestic +	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.070	44CE0594	2-Nov-2008
44CE0595	Domestic +	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.390	44CE0595	31-Oct-2008
44CE0596	Domestic +	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	1.190	44CE0596	29-Oct-2008
44CE0597	Domestic +	Farmstead, Trash scatter	20th-C, 1st half	Not Eligible (VDHR)	3.700	44CE0597	30-Oct-2008
44CE0598	Domestic +	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.080	44CE0598	2-Nov-2008
44CE0615	Domestic	Farmstead	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	4.000	44CE0615	30-Dec-2008
44CE0616	Mil tary/Defense	Mil tary facil ty	20th-C, 2nd half	Not Eligible (VDHR)	0.090	44CE0616	5-Dec-2008
44CE0617	Domestic	Farmstead	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0617	8-Dec-2008
44CE0618	Domestic	Farmstead	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.070	44CE0618	31-Dec-2008
44CE0619	Mil tary/Defense	Mil tary facil ty	20th-C, 2nd half	Not Eligible (VDHR)	0.030	44CE0619	31-Dec-2008
44CE0620	Domestic, Funerary	Farmstead, Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.400	44CE0620	31-Dec-2008
44CE0621	Domestic	Farmstead	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.600	44CE0621	14-Jan-2009
44CE0622	Domestic	Farmstead	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	1.250	44CE0622	21-Jan-2009
44CE0623	Mil tary/Defense	Mil tary facil ty	20th-C, 2nd half	Not Eligible (VDHR)	0.150	44CE0623	4-Feb-2009
44CE0629	Mil tary/Defense	Camp	18th-C, 2nd half	Unknown	?	44CE0629	? 2009
44CE0633	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0633	20-May-2009
44CE0634	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	1.000	44CE0634	15-Nov-2009
44CE0635	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0635	29-Jan-2009
44CE0636	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.300	44CE0636	20-May-2009
44CE0637	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0637	19-Feb-2009
44CE0638	Funerary	Cemetery	20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0638	15-Nov-2009
44CE0639	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0639	27-Jan-2009
44CE0640	Funerary	Cemetery	19th-C	Recommended Not Eligible	0.500	44CE0640	30-Oct-2009

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0641	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.500	44CE0641	1-May-2009
44CE0642	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.500	44CE0642	15-Nov-2009
44CE0643	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.500	44CE0643	15-Nov-2009
44CE0644	Funerary	Cemetery	19th-C, 2nd half	Not Eligible (VDHR)	1.000	44CE0644	13-Nov-2009
44CE0645	Funerary	Cemetery	20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0645	14-May-2009
44CE0646	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	1.000	44CE0646	15-Nov-2009
44CE0647	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0647	25-Mar-2009
44CE0648	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.500	44CE0648	20-Feb-2009
44CE0649	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0649	29-Apr-2009
44CE0650	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0650	30-Apr-2009
44CE0651	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.300	44CE0651	1-Jul-2009
44CE0652	Funerary	Cemetery	20th-C, 1st half	Not Eligible (VDHR)	1.000	44CE0652	15-Nov-2009
44CE0653	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0653	15-May-2009
44CE0654	Funerary	Cemetery	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0654	2-Apr-2009
44CE0655	Funerary	Cemetery	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0655	2-Apr-2009
44CE0656	Domestic	Trash scatter	20th-C, 1st half	Not Eligible (VDHR)	0.080	44CE0656	28-Sep-2009
44CE0657	Domestic	Dwelling, single	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.400	44CE0657	28-Sep-2009
44CE0658	Religion, Funerary	Church, Cemetery	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	1.400	44CE0658	28-Sep-2009
44CE0659	Domestic	Outbuilding	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0659	2-Dec-2009
44CE0672	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.140	44CE0672	16-Mar-2010
44CE0673	Domestic	Farmstead	20th-C, 1st half	Potentially Eligible (VDHR)	0.250	44CE0673	7-Apr-2010
44CE0674	Domestic	Farmstead	20th-C, 1st half	Potentially Eligible (VDHR)	0.200	44CE0674	7-Apr-2010
[illegible]	Funerary	Cemetery	[illegible]	Not Eligible (VDHR)	[illegible]	44_E__7_	[illegible]
44CE0677	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	1.000	44CE0677	2-Feb-2011
44CE0678	Domestic	Dwelling, single	20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0678	2-Feb-2011
44CE0679	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	2.400	44CE0679	2-Feb-2011
44CE0680	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.400	44CE0680	2-Feb-2011
44CE0681	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	1.200	44CE0681	1-Feb-2011
44CE0682	Domestic	Dwelling, single	20th-C, 1st half	Not Eligible (VDHR)	0.200	44CE0682	2-Feb-2011
44CE0683	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	1.200	44CE0683	2-Feb-2011
44CE0684	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.500	44CE0684	1-Feb-2011
44CE0685	Domestic	Outbuilding	20th-C, 1st half	Not Eligible (VDHR)	0.400	44CE0685	1-Feb-2011
44CE0686	Funerary	Cemetery	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.300	44CE0686	1-Feb-2011
44CE0687	Domestic	Farmstead	20th-C, 1st half	Potentially Eligible (VDHR)	0.600	44CE0687	1-Feb-2011
44CE0688	Domestic	Dwelling, single	20th-C, 1st half	Not Eligible (VDHR)	0.350	44CE0688	15-Feb-2011
44CE0689	Settlement Patterns	Lith c scatter	Unknown Prehistoric	Potentially Eligible (VDHR)	0.800	44CE0689	18-Apr-2011
44CE0690	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.300	44CE0690	22-Mar-2011
44CE0691	Funerary	Cemetery	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.060	44CE0691	24-Mar-2011
44CE0692	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	1.000	44CE0692	8-Dec-2011
44CE0693	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.220	44CE0693	8-Dec-2011
44CE0694	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Potentially Eligible (VDHR)	1.400	44CE0694	8-Dec-2011

VDHR Number	Theme	Site Type	Temporal Period	National Register Eligibility	Acres	VDHR Site Form	Recorded
44CE0695	Social	Pictograph site	20th-C, 1st half	Not Eligible (VDHR)	0.080	44CE0695	8-Dec-2011
44CE0696	Mil tary/Defense	Mil tary facil ty	20th-C, 2nd half	Not Eligible (VDHR)	0.200	44CE0696	8-Dec-2011
44CE0697	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	0.900	44CE0697	8-Dec-2011
44CE0698	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	1.700	44CE0698	8-Dec-2011
44CE0699	Domestic	Trash scatter	20th-C, 1st half	Not Eligible (VDHR)	0.250	44CE0699	8-Dec-2011
44CE0700	Domestic	Farmstead	20th-C, 1st half	Potentially Eligible (VDHR)	0.300	44CE0700	9-Dec-2011
44CE0701	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	0.025	44CE0701	9-Dec-2011
44CE0702	Domestic	Farmstead	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0702	9-Dec-2011
44CE0703	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	1.100	44CE0703	9-Dec-2011
44CE0704	Domestic	Trash scatter	20th-C, 1st half	Not Eligible (VDHR)	0.400	44CE0704	9-Dec-2011
44CE0705	Domestic	Farmstead	19th-C; 20th-C, 1st half	Potentially Eligible (VDHR)	1.200	44CE0705	9-Dec-2011
44CE0706	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	1.200	44CE0706	9-Dec-2011
44CE0707	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Potentially Eligible (VDHR)	0.500	44CE0707	9-Dec-2011
44CE0708	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.400	44CE0708	9-Dec-2011
44CE0709	Domestic	Farmstead	20th-C, 1st half	Potentially Eligible (VDHR)	2.500	44CE0709	19-Dec-2011
44CE0710	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	1.000	44CE0710	12-Mar-2012
44CE0711	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Potentially Eligible (VDHR)	1.700	44CE0711	12-Mar-2012
44CE0712	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	1.000	44CE0712	12-Mar-2012
44CE0713	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Potentially Eligible (VDHR)	0.700	44CE0713	12-Mar-2012
44CE0714	Domestic	Farmstead	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	12.000	44CE0714	12-Mar-2012
44CE0715	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.500	44CE0715	12-Mar-2012
44CE0716	Domestic	Farmstead	20th-C, 1st half	Not Eligible (VDHR)	0.200	44CE0716	12-Mar-2012
[illegible]	[illegible]	[illegible]	[illegible]	Not Eligible (VDHR)	[illegible]	44_E_717	[illegible]
44CE0718	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Potentially Eligible (VDHR)	0.250	44CE0718	3-May-2012
44CE0719	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Not Eligible (VDHR)	2.000	44CE0719	17-Oct-2012
44CE0720	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Potentially Eligible (VDHR)	0.800	44CE0720	17-Oct-2012
44CE0721	Domestic	Farmstead	19th-C, 4th quarter; 20th-C, 1st half	Potentially Eligible (VDHR)	0.750	44CE0721	18-Dec-2012
44CE0722	Funerary	Cemetery	19th-C; 20th-C, 1st half	Not Eligible (VDHR)	0.200	44CE0722	3-Jan-2013
44CE0723	Domestic	Farmstead	19th-C, 2nd half; 20th-C, 1st half	Not Eligible (VDHR)	2.000	44CE0723	8-Mar-2013
44CE0724	Mil tary/Defense	Earthworks	19th-C, 3rd quarter	Potentially Eligible (VDHR)	0.200	44CE0724	8-Mar-2013

VDHR Site No. / CRM Report No.	1301-01	1205-01	1204-02	1201-01	1110-01	1108-01	1107-01	1106-01	1105-01	1104-02	1103-02	1101-01	1008-02	1006-01	1005-01	1004-01	1001-01	0910-03	0909-02	0908-02	0907-01	0904-02	0903-02	0902-01	0901-01	0812-01	0811-01	0810-01	0809-01	0808-01	0807-02	0805-02	0804-02	0803-02	0801-02	0709-01	0707-01	0706-02	0703-02	0702-01	0604-01	0603-01	0602-02	0601-02	2006_GP_Management_Summary	0501-02	0402-04	0303-01	0301-02	0202-02	0201-01	0102-01	0101-01	2001-CRI-TimberHarvest-TA27A	2001-CRI-TimberHarvest-TA6C	0004-01	0003-01	0002-01	0001-01	9902-01	9901-01	9701-01	9402-01	9301-01	8301-01	7901-01	Site Form Only
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44CE0040																																		X																						X						X				X	
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CRM Report No. / VDHR Site No.	1301-01	1205-01	1204-02	1201-01	1110-01	1108-01	1107-01	1106-01	1105-01	1104-02	1103-02	1101-01	1008-02	1006-01	1005-01	1004-01	1001-01	0910-03	0909-02	0908-02	0907-01	0904-02	0903-02	0902-01	0901-01	0812-01	0811-01	0810-01	0809-01	0808-01	0807-02	0805-02	0804-02	0803-02	0801-02	0709-01	0707-01	0706-02	0703-02	0702-01	0604-01	0603-01	0602-02	0601-02	2006_GP_Management_Summary	0501-02	0402-04	0303-01	0301-02	0202-02	0201-01	0102-01	0101-01	2001-CRI-TimberHarvest-TA27A	2001-CRI-TimberHarvest-TA6C	0004-01	0003-01	0002-01	0001-01	9902-01	9901-01	9701-01	9402-01	9301-01	8301-01	7901-01	Site Form Only
44CE0080																																	X	X																			X			X						X				X	
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VDHR Site No. \ CRM Report No.	1301-01	1205-01	1204-02	1201-01	1110-01	1108-01	1107-01	1106-01	1105-01	1104-02	1103-02	1101-01	1008-02	1006-01	1005-01	1004-01	1001-01	0910-03	0909-02	0908-02	0907-01	0904-02	0903-02	0902-01	0901-01	0812-01	0811-01	0810-01	0809-01	0808-01	0807-02	0805-02	0804-02	0803-02	0801-02	0709-01	0707-01	0706-02	0703-02	0702-01	0604-01	0603-01	0602-02	0601-02	2006_GP_Management_Summary	0501-02	0402-04	0303-01	0301-02	0202-02	0201-01	0102-01	0101-01	2001-CRI-TimberHarvest-TA27A	2001-CRI-TimberHarvest-TA6C	0004-01	0003-01	0002-01	0001-01	9902-01	9901-01	9701-01	9402-01	9301-01	8301-01	7901-01	Site Form Only
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VDHR Site No. \ CRM Report No.	1301-01	1205-01	1204-02	1201-01	1110-01	1108-01	1107-01	1106-01	1105-01	1104-02	1103-02	1101-01	1008-02	1006-01	1005-01	1004-01	1001-01	0910-03	0909-02	0908-02	0907-01	0904-02	0903-02	0902-01	0901-01	0812-01	0811-01	0810-01	0809-01	0808-01	0807-02	0805-02	0804-02	0803-02	0801-02	0709-01	0707-01	0706-02	0703-02	0702-01	0604-01	0603-01	0602-02	0601-02	2006_GP_Management_Summary	0501-02	0402-04	0303-01	0301-02	0202-02	0201-01	0102-01	0101-01	2001-CRI-TimberHarvest-TA27A	2001-CRI-TimberHarvest-TA6C	0004-01	0003-01	0002-01	0001-01	9902-01	9901-01	9701-01	9402-01	9301-01	8301-01	7901-01	Site Form Only
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APPENDIX L

Architectural Resources List

Fort A.P. Hill - Architectural Resources List

VDHR Number	Resource Name	Year Built	County	Quadrangle	Register Listing	Eligibility	Site Form
016-0029	Port Royal Trashpit Archaeological Site	ca. 1700	Caroline	Port Royal	-	Demolished	016-0029
016-0052	Mount Church Site	ca. 1748	Caroline	Rappahannock Academy	-	Demolished	016-0052
016-0069	Liberty Baptist Church	1850	Caroline	Rappahannock Academy	VLR	Eligible (VDHR)	016-0069
016-0075	Cottage Home Site	1800	Caroline	Rappahannock Academy	-	Demolished	016-0075
016-0140	Garrett House	ca. 1835	Caroline	Port Royal	-	Demolished	016-0140
016-0145	Earhfast House		Caroline	Bowling Green	-	Demolished	016-0145
016-0344	Bridge #1013, Rt. 2, Campbell Creek	1932	Caroline	Woodford	-	Not Eligible (VDHR)	016-0344
016-0349-0001	Mica High School	1929	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0001
016-0349-0002	Building TT0211	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0002
016-0349-0003	Building TT0215	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0003
016-0349-0004	Building TT0216	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0004
016-0349-0005	Building TT0217	ca. 1920	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0005
016-0349-0006	Building TT0209	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0006
016-0349-0007	Frank E. Bowie House, Building TT0208	ca. 1930	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0007
016-0349-0008	Building TT0207	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0008
016-0349-0009	Garage, TT0206	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0009
016-0349-0010	O.E. Taylor House (Reservation Commander's House), SS0201	ca. 1930	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0010
016-0349-0011	Building TT0205	ca. 1930	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0011
016-0349-0012	Building TT0224	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR?)	016-0349-0012
016-0349-0013	Building TT0226	ca. 1940s	Caroline	Rappahannock Academy	-	Not Eligible (VDHR?)	016-0349-0013
016-0349-0014	Building TT0222	ca. 1930	Caroline	Rappahannock Academy	-	Not Eligible (VDHR?)	016-0349-0014
016-0349-0015	Building TT0707	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0015
016-0349-0016	Heat Plant Building-Dairy Barn/TT0708	ca. 1930	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0016
016-0349-0017	Tucker's Tavern II, Building TT0303	ca. 1940	Caroline	Bowling Green	-	Not Eligible (VDHR?)	016-0349-0017
016-0349-0018	Building TT0312	ca. 1940	Caroline	Bowling Green	-	Not Eligible (VDHR?)	016-0349-0018
016-0349-0019	Anderson Camp	ca. 1940-1970	Caroline	Bowling Green	-	Not Eligible (VDHR?)	016-0349-0019
016-0349-0020	Tucker's Tavern, Building TT0164	ca. 1980	Caroline	Bowling Green	-	Not Eligible (VDHR?)	016-0349-0020
016-0349-0021	Dolly Hill Guest House	ca. 1980	Caroline	Bowling Green	-	Not Eligible (VDHR?)	016-0349-0021
016-0349-0022	Headquarters, Fort AP Hill	ca. 1940	Caroline	Bowling Green	-	Not Eligible (VDHR?)	016-0349-0022
016-0349-0023	Thomas Fishing Retreat, The Lodge, SS0251	ca. 1930-1931	Caroline	Rappahannock Academy	-	Contributing (VDHR)	016-0349-0023
016-0349-0024	Powers House, Building SS0801	ca. 1910	Caroline	Port Royal	-	Recommended Eligible	016-0349-0024

VDHR Number	Resource Name	Year Built	County	Quadrangle	Register Listing	Eligibility	Site Form
016-0349-0025	Building TT0806	ca. 1940	Caroline	Port Royal	-	Not Eligible (VDHR?) / Demolished	016-0349-0025
016-0349-0026	Cooke Camp	ca. 1910-1970	Caroline	Port Royal	-	Not Eligible (VDHR?)	016-0349-0026
016-0349-0027	Bath House, TT0252	ca. 1930	Caroline	Rappahannock Academy	-	Not Contributing (VDHR)	016-0349-0027
016-0349-0028	House, SS0254	ca. 1930	Caroline	Rappahannock Academy	-	Contributing (VDHR)	016-0349-0028
016-0349-0029	Garage/Apartment, SS0253	ca. 1930	Caroline	Rappahannock Academy	-	Not Contributing (VDHR)	016-0349-0029
016-0349-0030	Barn, TT0257	ca. 1930	Caroline	Rappahannock Academy	-	Contributing (VDHR)	016-0349-0030
016-0349-0031	Chicken House, TT0256	ca. 1930	Caroline	Rappahannock Academy	-	Contributing (VDHR)	016-0349-0031
016-0349-0032	Springhouse, TT0255	ca. 1930	Caroline	Rappahannock Academy	-	Contributing (VDHR)	016-0349-0032
016-0349-0033	House Ruin	ca. 1920	Caroline	Rappahannock Academy	-	Collapsed	016-0349-0033
016-0349-0034	Dirt Bridge Warehouse Complex (Caroline Co. Farmers Cooperative Warehouse Complex)	ca. 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR) / Demolished	016-0349-0034
016-0349-0035	Pender Camp	ca. 1940-1970	Caroline	Rappahannock Academy	-	Not Eligible (VDHR?)	016-0349-0035
016-0349-0036	Engineering Administration Building P01220	1959	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0036
016-0349-0037	ADP Administration General Purpose- P01221	1959	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0037
016-0349-0038	Storage Shed General Purpose- P01222	1959	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0038
016-0349-0039	Water Treatment Building PWAT 14-P01213	1952	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0039
016-0349-0040	General Storehouse-T01274	1955	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0040
016-0349-0041	Water Treatment Building Well PWAT 04/P00803	1958	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0041
016-0349-0042	Commanding Officers Headquarters Building/TT0807	1942	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0042
016-0349-0043	Enlisted Barracks Without Mess/TT0815	1958	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0043
016-0349-0044	Officer Quarters, Annual Training/TT0816	1958	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0044
016-0349-0045	Officer Quarters, Annual Training/TT0817	1958	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0045
016-0349-0046	Officer Quarters, Annual Training/TT0818	1958	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0046
016-0349-0047	General Purpose Warehouse/TT1207	1955	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0047
016-0349-0048	Airfield Operations Building/P01201	1958	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0048

VDHR Number	Resource Name	Year Built	County	Quadrangle	Register Listing	Eligibility	Site Form
016-0349-0049	Theater Headquarters Area/ SS0137	1959	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0049
016-0349-0050	FE Maintenance Shop/P00151	1958	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0050
016-0349-0051	Fixed Laundry/TT0304	1942	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0051
016-0349-0052	Water Treatment Building PWAT 14/P00301	1952	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0052
016-0349-0053	Storage Facility General Purpose/P00220	1951	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0053
016-0349-0054	Water Treatment Building-PWAT 74/P00219	1951 (1950)	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0054
016-0349-0055	Water Treatment Building-PWAT 11 & PWAT 11A/P00705	1958	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0055
016-0349-0056	Dwelling, Fort A.P. Hill	1850	Caroline	Port Royal	-	Potentially Eligible (VDHR)	016-0349-0056
016-0349-0057	Shed	1870	Caroline	Guinea	-	Not Eligible (VDHR)	016-0349-0057
016-0349-0058	Smoots Pond Water Control Structure	1949	Caroline	Bowling Green	-	Not Eligible	016-0349-0058
016-0349-0059	Johnson Family Cemetery	pre 1940	Caroline	Rappahannock Academy	-	Potentially Eligible	016-0349-0059
016-0349-0060	Abandoned Cemetery, Route 608	pre 1940	Caroline	Rappahannock Academy	-	Potentially Eligible	016-0349-0060
016-0349-0061	Abandoned Cemetery, Route 608	pre 1940	Caroline	Rappahannock Academy	-	Potentially Eligible	016-0349-0061
016-0349-0062	Former Jeter family Cemetery	pre 1940	Caroline	Rappahannock Academy	-	Potentially Eligible	016-0349-0062
016-0349-0063	Abandoned Cemetery, Route 607	pre 1940	Caroline	Rappahannock Academy	-	Potentially Eligible	016-0349-0063
016-0349-0064	Abandoned Cemetery, Route 612	pre 1940	Caroline	Rappahannock Academy	-	Potentially Eligible	016-0349-0064
016-0349-0065	Abandoned Cemetery, Route 608	pre 1940	Caroline	Rappahannock Academy	-	Potentially Eligible	016-0349-0065
016-0349-0066	Abandoned Cemetery, Route 631	pre 1940	Caroline	Bowling Green	-	-	016-0349-0066
016-0349-0067	Abandoned Cemetery, Route 616	pre 1940	Caroline	Rappahannock Academy	-	-	016-0349-0067
016-0349-0068	Cemetery	pre 1940	Caroline	Bowling Green	-	-	-
016-0349-0069	Cemetery	pre 1940	Caroline	Bowling Green	-	-	-
016-0349-0070	Cemetery	pre 1940	Caroline	Supply	-	-	-
016-0349-0071	Cemetery	-	-	-	-	-	-
016-0349-0072	Abandoned Cemetery, Route 637	-	-	-	-	Not Eligible (VDHR)	016-0349-0072
016-0349-0073	Cemetery	pre 1940	Caroline	-	-	-	016-0349-0073
016-0349-0074	Bethesda Church Cemetery	pre 1940	Caroline	-	-	Not Eligible (VDHR)	016-0349-0074
016-0349-0075	Abandoned Cemetery, Route 620	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0075
016-0349-0076	Abandoned Cemetery, Route 637	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0076
016-0349-0077	Abandoned Cemetery, Route 619	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0077

VDHR Number	Resource Name	Year Built	County	Quadrangle	Register Listing	Eligibility	Site Form
016-0349-0078	Abandoned Cemetery, Route 620	pre 1940	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0078
016-0349-0079	Abandoned Cemetery, Route 608	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0079
016-0349-0080	Abandoned Cemetery, Route 637	pre 1940	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0080
016-0349-0081	Abandoned Cemetery, Route 625	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0081
016-0349-0082	Abandoned Cemetery, Route 618	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0082
016-0349-0083	Abandoned Cemetery, Route 618	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0083
016-0349-0084	Abandoned Cemetery, Route 618	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0084
016-0349-0085	Abandoned Cemetery, Route 625	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0085
016-0349-0086	Abandoned Cemetery, Route 618	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0086
016-0349-0087	Abandoned Cemetery, Route 17	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0087
016-0349-0088	Abandoned Cemetery, Route 620	pre 1940	Caroline	-	-	Not Eligible	016-0349-0088
016-0349-0089	Abandoned Cemetery, Route 620	pre 1940	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0089
016-0349-0090	Abandoned Cemetery, Route 619	pre 1940	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0090
016-0349-0091	Abandoned Cemetery, Route 619	pre 1940	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0091
016-0349-0092	Abandoned Cemetery, Route 614	pre 1940	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-0349-0092
016-0349-0093	Abandoned Cemetery, Route 619	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0093
016-0349-0094	Abandoned Cemetery, Route 17	pre 1940	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0094
016-0349-0095	Abandoned Cemetery, Route 619	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0095
016-0349-0096	Abandoned Cemetery, Route 619	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-0349-0096
016-0349-0097	Abandoned Cemetery, Route 620	pre 1940	Caroline	Port Royal	-	Not Eligible (VDHR)	016-0349-0097
016-0349-0098	Abandoned Cemetery, Route 608	pre 1940	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-0349-0098
016-5009	Travis Lake Historic District	1864	Caroline	Rappahannock Academy	VLR	Eligible (VDHR)	016-5009
016-5028	Jeter Family Cemetery	pre 1940	Caroline	Supply	-	Potentially Eligible (VDHR)	016-5028
016-5029	Riddle Family Cemetery	pre 1940	Caroline	Supply	-	Potentially Eligible (VDHR)	016-5029
016-5030	Garrett/Watts Family Cemetery	pre 1940	Caroline	Supply	-	Not Eligible (VDHR)	016-5030
016-5031	Mica Headquarters Historic District	-	Caroline	Rappahannock Academy	-	Not Eligible (VDHR)	016-5031
016-5091	Fort A.P. Hill Armory	1990	Caroline	Bowling Green	-	Not Eligible (VDHR)	016-5091

Fort A.P. Hill - Architectural Resources by Report

CRM Report No. / VDHR Resource No.	1107-01	1004-01	0908-02	0903-02	0901-01	0810-01	0803-02	0801-02	0711-02	0708-01	0604-01	0505-01	0403-01	0004-01	9402-01	Site Form Only
016-0029							X									
016-0052							X							X		
016-0069							X					X		X	X	
016-0075							X							X		
016-0140							X							X		
016-0145							X							X		
016-0344																
016-0349-0001							X							X	X	
016-0349-0002							X							X	X	
016-0349-0003							X							X	X	
016-0349-0004							X							X	X	
016-0349-0005							X							X	X	
016-0349-0006							X							X	X	
016-0349-0007							X							X	X	
016-0349-0008							X							X	X	
016-0349-0009							X							X	X	
016-0349-0010							X							X	X	
016-0349-0011							X			X				X	X	
016-0349-0012							X							X	X	
016-0349-0013							X							X	X	
016-0349-0014							X							X	X	
016-0349-0015							X							X	X	
016-0349-0016							X						X	X	X	
016-0349-0017							X							X	X	
016-0349-0018							X							X	X	
016-0349-0019							X							X	X	
016-0349-0020							X							X	X	
016-0349-0021							X							X	X	
016-0349-0022							X							X	X	
016-0349-0023							X					X		X	X	
016-0349-0024							X							X	X	
016-0349-0025							X							X	X	
016-0349-0026							X							X	X	
016-0349-0027							X					X		X	X	
016-0349-0028							X					X		X	X	
016-0349-0029							X					X		X	X	
016-0349-0030							X					X		X	X	
016-0349-0031							X							X	X	
016-0349-0032							X							X	X	
016-0349-0033							X							X	X	
016-0349-0034							X							X	X	
016-0349-0035							X							X	X	
016-0349-0036							X						X			
016-0349-0037							X						X			
016-0349-0038							X						X			
016-0349-0039							X						X			
016-0349-0040							X						X			
016-0349-0041							X						X			
016-0349-0042							X						X			

Fort A.P. Hill - Architectural Resources by Report

CRM Report No. / VDHR Resource No.	1107-01	1004-01	0908-02	0903-02	0901-01	0810-01	0803-02	0801-02	0711-02	0708-01	0604-01	0505-01	0403-01	0004-01	9402-01	Site Form Only
016-0349-0043							X						X			
016-0349-0044							X						X			
016-0349-0045							X						X			
016-0349-0046							X						X			
016-0349-0047							X						X			
016-0349-0048							X						X			
016-0349-0049							X						X			
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016-0349-0055							X						X			
016-0349-0056							X						X			
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016-0349-0058									X							
016-0349-0059								X								
016-0349-0060						X										
016-0349-0061						X										
016-0349-0062						X										
016-0349-0063						X										
016-0349-0064						X										
016-0349-0065						X										
016-0349-0066																
016-0349-0067																
016-0349-0068	X				X											
016-0349-0069	X				X											
016-0349-0070					X											
016-0349-0071				X												
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016-0349-0073			X													
016-0349-0074		X														
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016-0349-0086		X														
016-0349-0087		X														
016-0349-0088		X														
016-0349-0089		X														
016-0349-0090		X														
016-0349-0091		X														

Fort A.P. Hill - Architectural Resources by Report

CRM Report No. / VDHR Resource No.	1107-01	1004-01	0908-02	0903-02	0901-01	0810-01	0803-02	0801-02	0711-02	0708-01	0604-01	0505-01	0403-01	0004-01	9402-01	Site Form Only
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016-0349-0095		X														
016-0349-0096		X														
016-0349-0097		X														
016-0349-0098		X														
016-5009							X									
016-5028											X					
016-5029											X					
016-5030											X					
016-5031							X			X						
016-5091																

APPENDIX M

National Register Nomination Forms

Liberty Church Nomination Form

NPS Form 10-900
(Rev. 10-90)

VLR- 6/19/96

United States Department of the Interior
National Park Service

National Register of Historic Places
Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor or computer, to complete all items

1. Name of Property

historic name Liberty Baptist Church
other names/site number VDHR Site No. 16-69

2. Location

street & number N. side Travis Lake Rd. 0.5 mi. NE. of Liberty, Ft. A. P. Hill N/A not for publication
city or town Bowling Green vicinity
state Virginia code VA county Caroline code 033 zip code 22427

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this _X_ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property _X_ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally ___ statewide _X_ locally. (___ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

In my opinion, the property _X_ meets does not meet the National Register criteria. (See continuation sheet for additional comments.)

Director, Resource Information Oct. 4, 1996
Signature of commenting or other official/Title Date

Virginia Department of Historic Resources
State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that this property is: Signature of the Keeper Date of Action

____ entered in the National Register.
___ See continuation sheet.
____ determined eligible for the National Register.
___ See continuation sheet.
____ determined not eligible for the National Register.
____ removed from the National Register.
____ other (explain):

5. Classification

Ownership of Property
(Check as many boxes as apply)

___ private
___ public-local
___ public-State
_X_ public-Federal

Category of Property
(Check only one box)

_X_ building(s)
___ district
___ site
___ structure
___ object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
1	1	buildings
1		sites
		structures
		objects
2	1	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

Category	*Subcategory*
RELIGION	religious facility
LANDSCAPE	natural feature

Current Functions
(Enter categories from instructions)

Category	*Subcategory*
RELIGION	religious facility
LANDSCAPE	natural feature

7. Description

Architectural Classification
(Enter categories from instructions)

Greek Revival

Materials
(Enter categories from instructions)

foundation	BRICK
walls	BRICK
roof	METAL
other	GLASS

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

___ A Property is associated with events that have made a significant contribution to the broad patterns of our history.

___ B Property is associated with the lives of persons *significant in our past.*

X C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

___ D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "X" in all the boxes that apply.)

Property is:

X A owned by a religious institution or used for religious purposes.

___ B removed from its original location.

___ C a birthplace or a grave.

___ D a cemetery.

___ E a reconstructed building, object, or structure.

___ F a commemorative property.

___ G less than 50 years of age or achieved significance within the past fifty years.

Areas of Significance

(Enter categories from instructions)

ARCHITECTURE

Period of Significance

1850

Significant Dates

1850

Significant Person

(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

N/A

Architect/Builder

unknown

Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67) has been requested

___ previously listed in the National Register

___ previously determined eligible by the National Register

___ designated a National Historic Landmark

___ recorded by Historic American Buildings Survey # _____

___ recorded by Historic American Engineering Record # _____

Primary location of additional data:

X State Historic Preservation Office

___ Other State agency

___ Federal agency

___ Local government

___ University

___ Other

Name of repository:

_____

10. Geographical Data

Acreage of Property approximately 9.5 acres

UTM References

(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing		Zone	Easting	Northing
1	17	294600	4224650	3	17	294300	4224400
2	17	294600	4224400	4	17	294300	4224650

See continuation sheet.

Verbal Boundary Description

(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification

(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title J. Daniel Pezzoni
organization J. Daniel Pezzoni, Preservation Consultant date August 9, 1995
street & number PO Box 7825 telephone (540) 366-0787
city or town Roanoke state VA zip code 24019-0825

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items

(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name United States of America contact: Commander, Fort A. P. Hill
street & number Attn: ANAP-CD telephone (804) 633-8366
city or town Bowling Green state VA zip code 22427-5000

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

NARRATIVE DESCRIPTION

Summary

Liberty Baptist Church is a two-story brick building constructed in 1850 approximately six miles north of the town of Bowling Green, Caroline County, Virginia, in an area now part of the Fort A. P. Hill army installation. The south-facing nave-plan church measures 40' by 50' and has dual entries on the front gable end, three two-story windows on each side, later round-arched stained-glass windows, and modern metal roofing. Inside, the Greek Revival sanctuary features a gallery supported by classical columns, and a reredos behind the altar consists of flat pilasters supporting a simple entablature. Behind the church are a historic spring and a modern privy. The church is reached by a short approach drive that parallels Travis Lake Road on its north side, and it stands in a park-like setting surrounded by woods. The western tip of Travis Lake, the dominant feature of a proposed National Register district, is located slightly over half a mile to the east.

Inventory

1. **Liberty Baptist Church.** 1850. Contributing building.
2. **Spring.** Probably in use by the 1790s. Contributing site.
3. **Privy.** Second half 20th c. Noncontributing building.

Church Exterior

The church is constructed of five-course American-bond brickwork with closer bricks at the corners and pencilled mortar joints. At the top of the side walls runs a wood cornice with cyma recta and cyma reversa bed moldings, cornice returns on the front gable, and shaped stop boards on the rear gable. The front elevation features two entries, each with carefully shaped stone thresholds and steps and three-panel double-leaf doors that form a six-panel arrangement when closed. Nineteenth- and twentieth-century names and dates are written in pencil on the mortar joints to each side of the entries. Over the doors are eight-over-eight-sash windows and, in the peak of the gable, a round-arched opening enclosed with a board giving the name and date of the church and painted with a yin-yang emblem symbolic of the Twenty-Ninth Infantry Division. The three-bay side elevations feature two-story window openings with twelve-over-twelve-sash windows below and eight-over-eight-sash windows above separated by paneled spandrels. The lower sashes of the rear side windows have been replaced with stained glass memorial windows (see interior description). Two doorways on the rear elevation mirror the front elevation arrangement; between them is a large stained glass altar window (see interior description).

Description (continued)

Door and window surrounds are molded. Brick flues rise at the eaves of the roof, which was resheathed in metal in the early 1990s.

Church Interior

The interior features modern wood flooring, plastered walls with a modern wood-paneled wainscot, and a sheetrock ceiling with a molded cornice replacing an earlier plaster-and-lath ceiling that was damaged in the early 1990s. With the exception of the gallery pews, the sanctuary and altar furnishings are modern. A gallery originally intended for use by black members of the congregation extends along the three non-altar sides of the sanctuary. The gallery is supported by classical wood columns (Doric in inspiration) with molded capitals and has a sloping bleacher floor and a paneled railing. Simple plank pews and several more elaborate Gothic pews stand in the gallery (the former appear to be original to the church). A dog-leg stair with rectangular-section newels and balusters rises to the gallery in the southeast corner. Enclosed winder stairs in the north corners of the sanctuary formerly rose to the gallery but have since been floored over.

The focal point of the sanctuary is the altar, backed by a Greek Revival pilastered reredos that frames an arched stained-glass window with marbled green quarrel panes, an amber border, and a pink fleur-de-lis at its center. The window openings to either side of the altar contain memorial stained-glass windows. The richly colored window on the west side is dedicated to John and Elizabeth B. Holloway, and the more pastel window on the east side is dedicated to the Third Armored Cavalry Regiment ("Brave Rifles") and dated 1951. Other sanctuary features include paneled entry embrasures, beaded board spandrels between the first- and second-story window sashes, and rounded stove flues rising on the side walls. The roof structure, visible through a hatch above the south end of the sanctuary, consists of mortise-and-tenoned trusses with principal rafters that support purlins and common rafters.

Outbuildings and Landscape Features

Leading up to the church from the approach drive is a Y-shaped concrete walkway dating to the early twentieth century. Off the east side of the church are two poured concrete footers associated with an unidentified former addition or separate structure. A cemetery with a wire fence formerly extended behind (to the north of) the church, the only present above-ground evidence of which is a carpet of periwinkle. A road trace leads north and downhill approximately one-hundred yards to a spring. The spring is lined with stones (apparently a

Description (continued)

modern addition) and flows into a branch known variously in old documents as "the meeting house spring branch" or "Liberty Branch." About fifty yards to the northwest of the church stands a modern two-compartment privy with a standard A. P. Hill latrine form, a shed roof, and corrugated metal siding. The area around the church has a park-like ambience shaded by mature oaks, tulip poplars, and cedars. Surrounding this relatively open area is deciduous forest.

Integrity Statement

Liberty Baptist Church retains good historic integrity. Since its acquisition by the army, repairs and maintenance have respected the historic fabric of the building; for example, a 1993 reroofing of the building replaced in kind the metal sheathing that had covered the building from at least the early twentieth century, and a new ceiling installed in the sanctuary matched the appearance of the original ceiling. A spring that served as a water source during services still flows in a picturesque wooded setting north of the church. One associated historic resource that has been adversely affected is the church cemetery. Marked graves in this cemetery were moved to another location when the A. P. Hill Military Reservation was established in the early 1940s. Unmarked graves presumably still lie underground near the church.

Architectural Analysis

The first Liberty Baptist Church was a frame meeting house constructed at or near the present site in 1796. Church members James Pittman and William Taliaferro contracted with Absalom Bradley to construct a 20' by 32' building with a "shed" and two galleries.[1] This building served until 1850 when the present brick church was completed. Like the original building, the brick church featured galleries that were intended for use by black members.

The 1850 building was typical of churches built throughout Virginia during the antebellum period, as demonstrated by such standard features as its gable-fronted nave form and dual front entries. Liberty Church shared even closer similarities with other Baptist churches built in the Fort A. P. Hill area during the mid-nineteenth century. These generally featured windows positioned directly above the dual entries and an arched opening--either a window, vent, or signage panel--in the peak of the front gable.[2] Of this group, Liberty Church is the only one to survive, since the others were torn down after they were acquired by the military.

Description (continued)

Endnotes

1. Wright, "Brief History;" Fall, "Liberty Church."

2. Works Progress Administration survey files; PMA and Traceries, "Historic Architectural Survey of Caroline County," 95-108.

NARRATIVE STATEMENT OF SIGNIFICANCE

Summary

Liberty Baptist Church is associated with one of the oldest Baptist meetings in Caroline County, Virginia. The earliest reference to the church dates to 1796, with more formal organization following in the 1810s. The present church, a brick nave-plan building built in 1850, is a well-preserved example of the churches built in the county during the antebellum period. The interior features Greek Revival detail and a slave gallery. From the Second World War to the present, the building has served as the Post Chapel for Fort A. P. Hill, and it is the only pre-1941 religious building to survive on the base.

Justification of Criteria

Liberty Baptist Church is eligible for the National Register of Historic Places in the area of architecture as one of Caroline County's best preserved antebellum churches, and as the sole survivor of a number of churches that stood on the site of Fort A. P. Hill before 1941. The church exhibits characteristics of form and detail that were typical of the county's now depleted stock of early churches, such as its gable-front elevation with windows and an arched gable opening positioned over dual entries. The period of significance for the church corresponds to its year of construction, 1850. The church is eligible at the local level of significance.

Acknowledgments

A number of individuals and organizations assisted in the preparation of this report. Terry Banks and Evelyn Peyton served as contacts for the Fort A. P. Hill Environmental Office. Len Winter served as the contact for Gray & Pape, Inc. Frederick J. Anderson, Executive Director of the Virginia Baptist Historical Society, provided historical information. Specialist Ralph Cooper, assistant to the Post Chaplain, provided information on the present use of Liberty Baptist Church.

Historical Background

During the colonial period, the Church of England was the only officially recognized church in Caroline County, as in other Virginia counties, but beginning in the early eighteenth century, Quakers, Presbyterians, and other religious dissenters began to settle and worship in the area. Baptists were present in the 1740s; by the Revolution they apparently constituted the largest dissenting group in the county. Early Baptist congregations included Carmel and Reed's (Mount Horeb), both organized in 1773, and Salem, organized in 1788.[1] Liberty Baptist Church was in existence by 1796, the year church members James Pittman and William Taliaferro contracted

Statement of Significance (continued)

with Absalom Bradley to build a frame meeting house at or near the site of the present church. Pittman and Taliaferro had both been jailed during the 1770s for sanctioning "preaching in their home[s];" the name selected for their church--Liberty--probably refers to the religious freedom experienced by the two men after the Revolution. Not much is known about Liberty Church until the 1810s, when Hipkins Pittman is recorded as the congregation's first known pastor. According to early church minutes, the majority of members were black, primarily the slaves of white masters who attended the church. During the 1830s and 1840s, a total of 193 whites and 396 blacks were enumerated on church membership lists.[2]

In the late 1840s, a controversy arose in the congregation over the temperance issue, and a large portion of the membership--including the pastor, the Rev. Lawrence Battaile--left Liberty to form Bethesda Church, located several miles to the north. Bethesda constructed a brick church in 1847-48, and in 1850, apparently in response, the remnants of the Liberty congregation completed a brick church to replace the frame meeting house. (Unfortunately, church records for the period do not preserve information concerning the construction of the brick church.)[3] The new church seated 300 members on the main floor and 150 in the gallery, which was used by black members, and the congregation supported white and black Sunday schools. In 1868, after the Civil War, many black members left the congregation to found other churches, although the option to retain membership at Liberty was offered. The congregation continued to support schooling for local blacks after the war.[4]

Through the years, the congregation maintained a strict moral code. For example, in 1868 the church resolved to expel any member found guilty of dancing, and non-attendance, intemperance, dishonesty, and attending balls, barbecues, and the theater also triggered disciplinary action. Services were held at Liberty Church on a monthly basis until the 1930s, when a bimonthly schedule was instituted. In 1939-40, the Rev. J. R. Noffsinger undertook a renovation of the church and grounds, installing electric lights and placing markers over all known graves in the cemetery.

Less than a year after this work was completed, the congregation learned that the military would take its church and other properties in northeast Caroline County to create the A. P. Hill Military Reservation. The last service, an all-day program, was held on June 1, 1941. Traditionally, dinner was prepared and served on the grounds, but at this service members and guests were asked to bring picnic lunches since so many were in the process of moving from their farms.[5] Church membership at the time numbered approximately 150 members. With the dissolution of the church, members from Liberty and other Baptist churches in the area joined congregations

Statement of Significance (continued)

located outside the military reservation. Marked graves from the site were moved to a cemetery located at Broaddus Pond near Bowling Green.[6]

Most preexisting buildings acquired by the military were torn down or allowed to deteriorate, but Liberty Church was pressed into service as the Post Chapel in 1942. During World War II and after, the Post Chaplain held services in the church. In recent years services have been conducted during the summer only. Other groups have used the chapel for religious worship, including the Virginia Military Academy (which maintains offices at nearby Heth camp) and former members of Liberty Baptist Church, who held annual homecoming services through the 1960s.[7]

Statement of Significance (continued)

Endnotes

1. PMA and Traceries, "Historic Architectural Survey of Caroline County, Virginia," 95-106.

2. *Caroline Progress*, May 22 and 29, 1941; Wright, "Brief History."

3. Frederick J. Anderson, personal communication.

4. *Caroline Progress*, May 22 and 29, 1941.

5. Ibid.

6. Evans, "History of Fort A. P. Hill," 14.

7. Interview with Ralph Cooper, assistant to the Fort A. P. Hill Post Chaplain, August 3, 1995; Fall, "Liberty Church."

BIBLIOGRAPHY

Caroline County deed records. Caroline County Courthouse, Bowling Green, Va.

The Caroline Progress (Bowling Green, Va.).

Evans, Gerald T. "A History of Fort A. P. Hill." Carlisle Barracks, Pa.: 1993 (draft).

Fall, Ralph Emmett. "Liberty Church (Baptist)." Virginia Historic Landmarks Commission Survey Form, 1972.

_____. *People, Postoffices and Communities in Caroline County, Virginia, 1727-1969.* McDonough, Ga.: author, 1989.

PMA Consulting Services and Traceries. "Historic Architectural Survey of Caroline County, Virginia." Washington, D.C.: 1992.

Winter, Len and J. Daniel Pezzoni. "A Phase I Cultural Resource Inventory of Fort A.P. Hill, Caroline County, Virginia." Richmond, Va.: Gray & Pape, Inc., 1994.

Works Progress Administration. "Liberty Baptist Church." Survey form, 1937.

Wright, Mrs. John, comp. "A Brief History of Liberty, Bethesda, Upper Zion & Zoar Baptist Church." n. d.

Verbal Boundary Description

The boundaries of the Liberty Baptist Church nominated parcel are portrayed on the 1:200 scale map that appears as Exhibit A.

Boundary Justification

The boundaries of the Liberty Baptist Church nominated parcel include the contributing church and spring, a noncontributing privy, and the church's park-like setting. The boundaries also include the site of a former cemetery located behind (north of) the church. Marked graves from this cemetery were moved after the establishment of the Fort A. P. Hill Military Reservation in 1941, but unmarked graves are likely to remain in the area.

PHOTOGRAPHS

All photographs are of: Liberty Baptist Church, VDHR # 16-69

1. CREDIT: J. Daniel Pezzoni
   DATE: 1995
   NEGATIVE FILED: Virginia State Library, Richmond, Va.
   VIEW OF: West and south (front) elevations; view facing north.
   NEG. NO.: VDHR # 14164
   FILE NO.: VDHR # 16-69
   PHOTO 1 of 6

2. CREDIT: J. Daniel Pezzoni
   DATE: 1995
   NEGATIVE FILED: Virginia State Library, Richmond, Va.
   VIEW OF: South (front) and east elevations; view facing north.
   NEG. NO.: VDHR # 14164
   FILE NO.: VDHR # 16-69
   PHOTO 2 of 6

3. CREDIT: J. Daniel Pezzoni
   DATE: 1995
   NEGATIVE FILED: Virginia State Library, Richmond, Va.
   VIEW OF: North and west elevations; view facing southeast.
   NEG. NO.: VDHR # 14164
   FILE NO.: VDHR # 16-69
   PHOTO 3 of 6

4. CREDIT: J. Daniel Pezzoni
   DATE: 1995
   NEGATIVE FILED: Virginia State Library, Richmond, Va.
   VIEW OF: Sanctuary with reredos and gallery.
   NEG. NO.: VDHR # 14164
   FILE NO.: VDHR # 16-69
   PHOTO 4 of 6

Photographs (continued)

5. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: Sanctuary with gallery.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-69
PHOTO 5 of 6

6. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: Spring.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-69
PHOTO 6 of 6

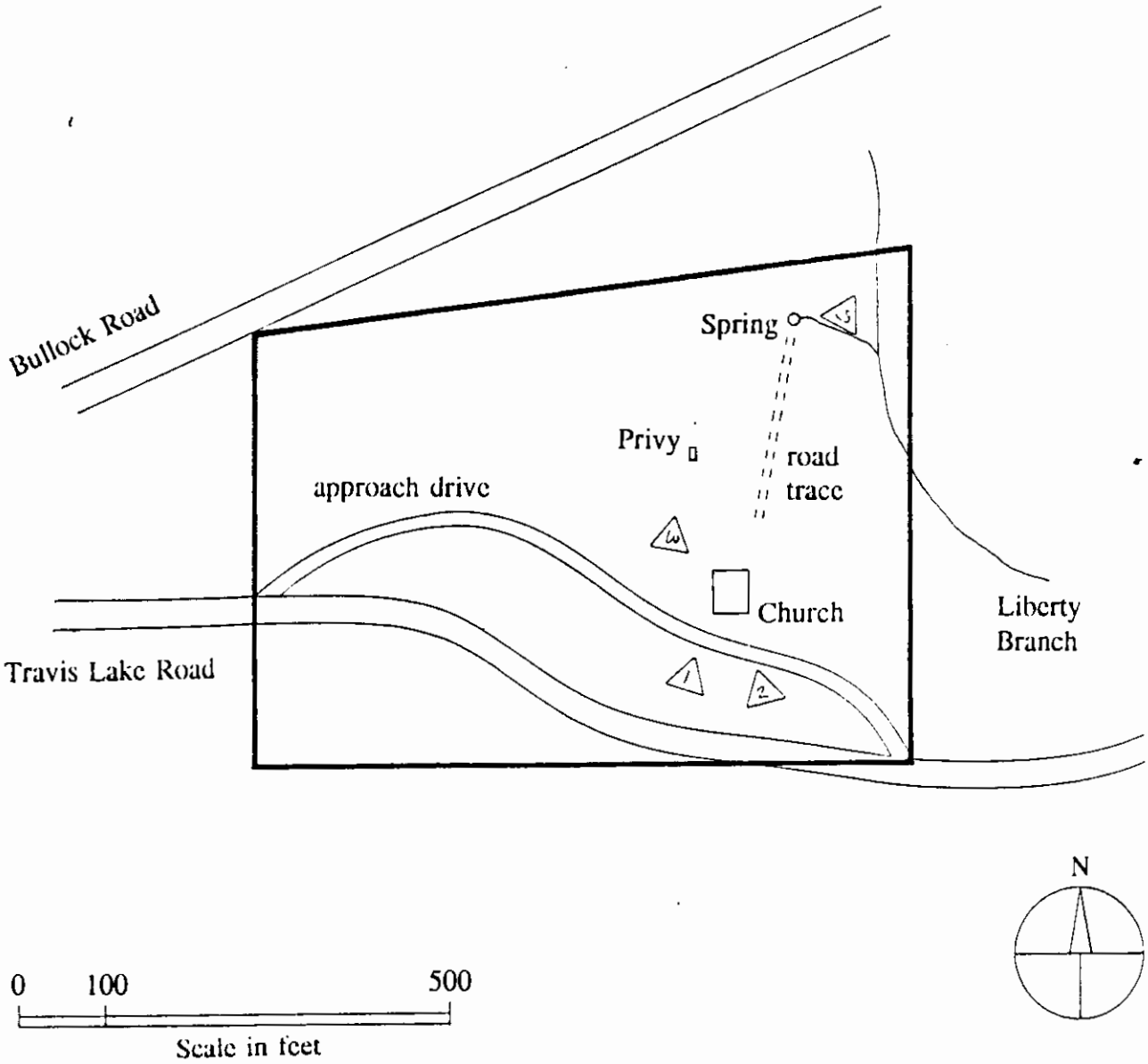


Exhibit A. Liberty Baptist Church nominated parcel. Angle and number of photographs indicated by triangles.

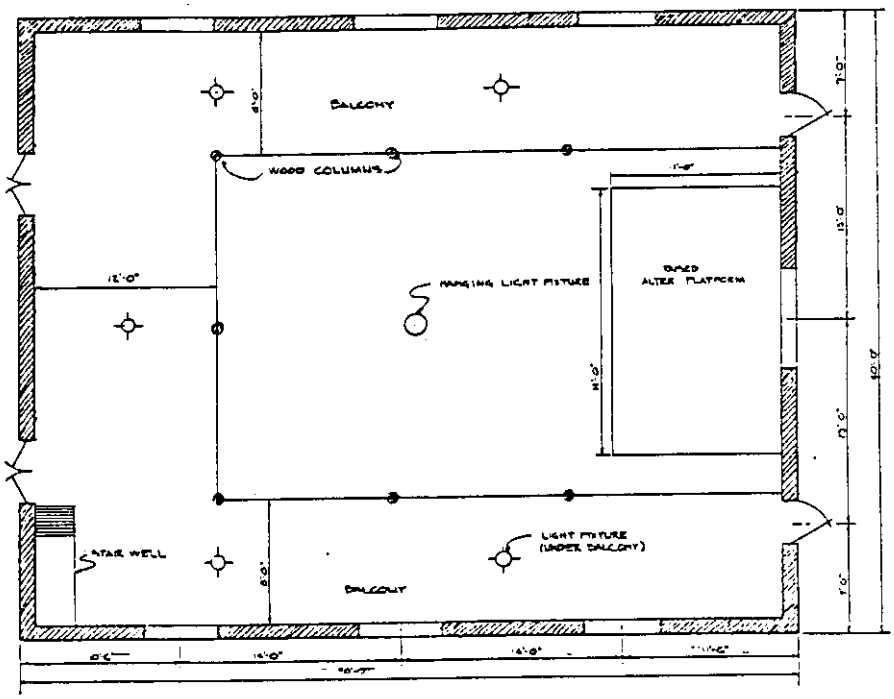
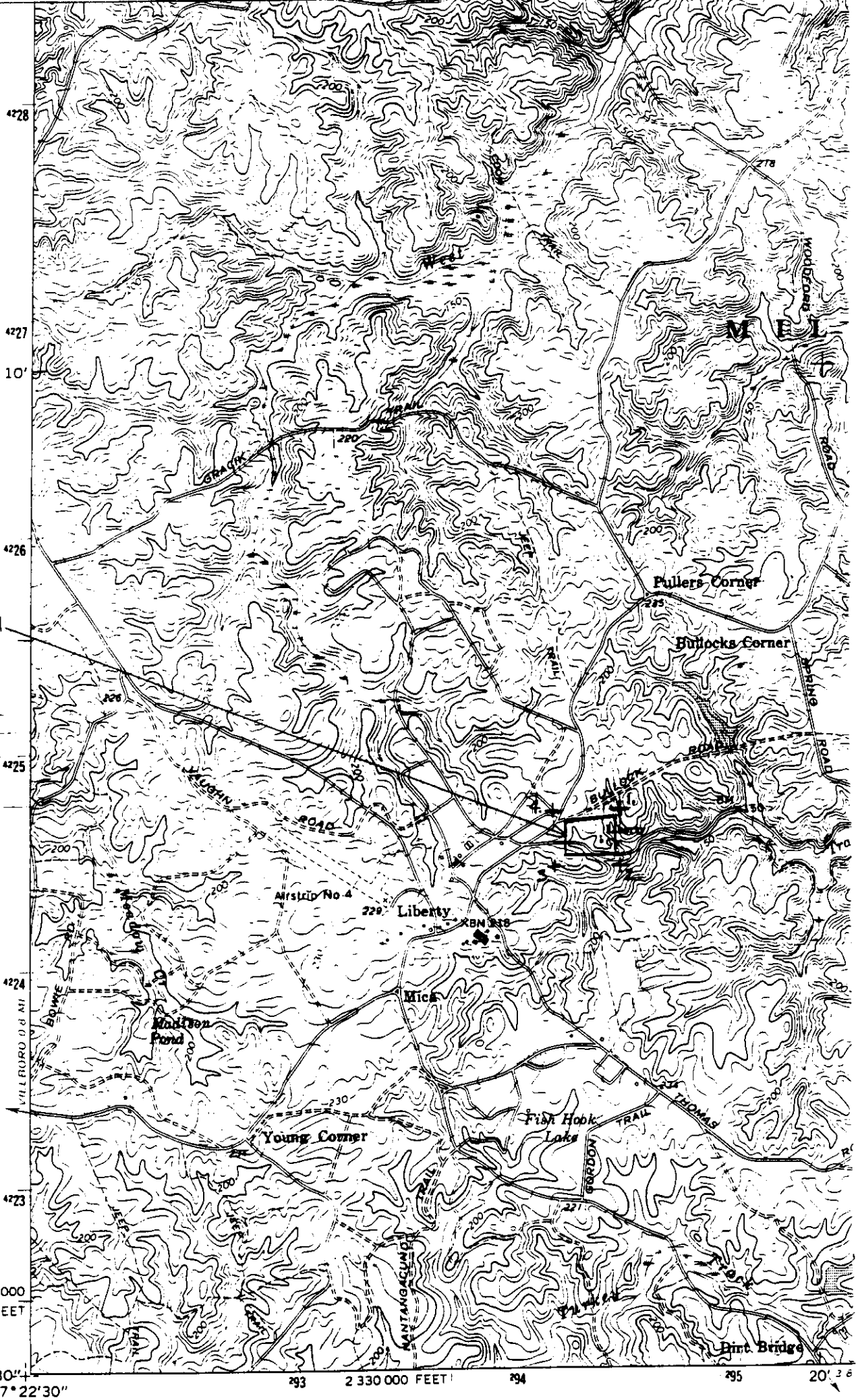


Exhibit B. Liberty Baptist Church floor plan. Based on "Liberty Chapel, Bldg. # 250," Drawing No. 65-28, from Fort A. P. Hill buildings and grounds records. Scale: 1" = 12'-6".

LIBERTY BAPTIST CHURCH
Ft. A.P. Hill
Caroline Co., VA
UTM ref. (zone 18):
1. E294600 N4224650
2. E294600 N4224400
3. E294300 N4224400
4. E294300 N4224650



Travis Lake Nomination Form

VLR- 6/19/96

United States Department of the Interior
National Park Service

National Register of Historic Places
Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name **Travis Lake Historic District**
other names/site number VDHR Site No. ~~16-349-23~~ 16-5009

2. Location

street & number Travis Lake Road, Fort A. P. Hill N/A not for publication
city or town Bowling Green vicinity
state Virginia code VA county Caroline code 033 zip code 22427

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this X nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally ___ statewide X locally. (___ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

In my opinion, the property X meets ___ does not meet the National Register criteria. (___ See continuation sheet for additional comments.)

Director & Resource Information Oct. 4, 1996

Signature of commenting or other official/Title Date

Virginia Department of Historic Resources

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that this property is: Signature of the Keeper Date of Action

___ entered in the National Register.
___ See continuation sheet.
___ determined eligible for the National Register.
___ See continuation sheet.
___ determined not eligible for the National Register.
___ removed from the National Register.
___ other (explain):

5. Classification

Ownership of Property
(Check as many boxes as apply)

___ private
___ public-local
___ public-State
X public-Federal

Category of Property
(Check only one box)

___ building(s)
X district
___ site
___ structure
___ object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
4	4	buildings
1		sites
2	2	structures
		objects
7	6	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

Category	*Subcategory*
DOMESTIC	camp
DOMESTIC	institutional housing
LANDSCAPE	natural feature
INDUSTRY	waterworks
AGRICULTURE	animal facility
RECREATION & CULTURE	outdoor recreation

Current Functions
(Enter categories from instructions)

Category	*Subcategory*
DOMESTIC	institutional housing
RECREATION AND CULTURE	outdoor recreation
LANDSCAPE	natural feature

7. Description

Architectural Classification
(Enter categories from instructions)

Late 19th and Early 20th Century American Movements

Other: Rustic Style

Materials
(Enter categories from instructions)

foundation	CONCRETE
walls	WOOD
	SYNTHETICS
roof	STONE
other	EARTH
	ASPHALT

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

X A Property is associated with events that have made a significant contribution to the broad patterns of our history.

___ B Property is associated with the lives of persons significant in our past.

X C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

___ D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "X" in all the boxes that apply.)

Property is:

___ A owned by a religious institution or used for religious purposes.

___ B removed from its original location.

___ C a birthplace or a grave.

___ D a cemetery.

___ E a reconstructed building, object, or structure.

___ F a commemorative property.

___ G less than 50 years of age or achieved significance within the past fifty years.

Areas of Significance

(Enter categories from instructions)

ARCHITECTURE

MILITARY

Period of Significance

1864-1945

Significant Dates

1938-39

1941

Significant Person

(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

N/A

Architect/Builder

unknown

Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67) has been requested

___ previously listed in the National Register

___ previously determined eligible by the National Register

___ designated a National Historic Landmark

___ recorded by Historic American Buildings Survey # _____

___ recorded by Historic American Engineering Record # _____

Primary location of additional data:

X State Historic Preservation Office

___ Other State agency

___ Federal agency

___ Local government

___ University

___ Other

Name of repository:

10. Geographical Data

Acreage of Property **approximately 150 acres**

UTM References

(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing		Zone	Easting	Northing
1	17	296220	4224920	3	17	296050	4224230
2	17	296550	4223990	4	17	295840	4224230

X See continuation sheet.

Verbal Boundary Description

(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification

(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title J. Daniel Pezzoni
organization J. Daniel Pezzoni, Preservation Consultant date August 16, 1995
street & number PO Box 7825 telephone (540) 366-0787
city or town Roanoke state VA zip code 24019-0825

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items

(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name United States of America contact: Commander, Fort A. P. Hill
street & number Attn: ANAP-CD telephone (804) 633-8366
city or town Bowling Green state VA zip code 22427-5000

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.2 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

NARRATIVE DESCRIPTION

Summary

The Travis Lake Historic District occupies approximately 150 acres of the northern part of Fort A. P. Hill in Caroline County, Virginia, approximately six miles north of the town of Bowling Green. The district lies in the midst of gently rolling, forested topography at the headwaters of Goldenvale Creek, a tributary of the Rappahannock River. The dominant feature of the district is Travis Lake, the upper part of which covers thirty acres (the lower half of the lake, located below a former mill dam, is largely excluded from the district). The shores of the lake are forested with beeches, oaks, and pines and an understory of mountain laurel and dogwood, and the lake surface supports water lilies and other aquatic plants. Travis Lake Road (which follows the course of an antebellum road) hugs the shore on its east and north sides, connecting to a gravel road that follows the other shores of the lake. Occupying a knoll at the northeast end of the lake is a large log residence constructed in 1938-39 and known as the Lodge. Below the Lodge is the former mill dam, which forms part of the bed of Travis Lake Road. At the north end of the dam stands a complex of secondary dwellings and farm buildings. Liberty Baptist Church, an antebellum brick building also proposed for National Register listing, stands about a half mile to the west of the district.

Inventory

Entries give the resource name, date or period of construction, Fort A. P. Hill installation number followed by the Virginia Department of Historic Resources site number in parentheses, contributing or noncontributing status, physical and historical description, and sources of information.

1. **Travis Lake.** Antebellum. Contributing site.

The thirty-acre upper part of Travis Lake has maintained its present form since at least the Civil War, at which time it served as the Saunders Mill Pond. F. M. Travis acquired the lake and mill seat by the turn of the twentieth century. The relatively steep lake shores have been wooded since the mid-nineteenth century, providing lumber to the Travis sawmill and probably sawmills that preceded it. The lake and lake shores have been used for fishing, boating, and hunting since at least the nineteenth century, although hunting is now restricted. (Sources: "Map of Caroline County;" *Washington Post*, February 5, 1968.)

2. **The Lodge.** 1938-39. SS025 (16-349-23). Contributing building.

Description (continued)

The Lodge is a rambling one-story Rustic-style fishing retreat constructed in 1938-39 on a wooded bluff overlooking Travis Lake. The building is shaped like a flattened "U" with a central section and two flanking wings facing east, all constructed of saddle-notched logs (see plan in Exhibit C). The gable roof features Craftsman-influenced log gable brackets and plain rafter tails, square-edged slate shingle sheathing, and several shed dormers with beaded board siding. Rising at the junctures of the central section and the two wings are large sandstone fieldstone chimneys with rectangular profiles (the foundation features similar stonework). Centered on the east facade of the central section is a front entry sheltered by a modern gabled stoop with slate roofing and wood shingling in the gable. The entry has double doors constructed of beaded battens set at a diagonal, with wrought iron strap hinges and knockers. The west facade of the building looks out over Travis Lake and features a porch (now enclosed) with massive log posts and brackets. Flanking the porch are two short bedroom wings. Other exterior features include modern casement windows (similar in appearance to the original steel casements), modern picture windows, white concrete daubing that contrasts with the dark brown of the stained logs, and an exterior stair on the south wing gable end that provides access to a sleeping garret (a similar garret at the north end of the building is reached by an interior stair). A stairwell at the north end of the building provides access to the basement.

The front entrance opens into a large living hall that has stone fireplaces at each end and is spanned by roof trusses with heavy timbers mortise-and-tenoned and pegged together. The hall also has rough wooden mantel shelves supported by stone corbels, pegged floorboards, varnished log walls, and modern rustic furnishings. From the hall, two doors lead to the former porch (now enclosed as a dining room) that features a flagstone floor and modern wood bar. The south wing contains three bedrooms and a passageway; the north wing contains the dining room, a modernized kitchen, and a butler's pantry with original wood and glass cabinets. Throughout the interior are varnished wooden walls and ceilings, and batten doors with Z-braces and decorative strap hinges and latches. The basement has stone walls and metal ash-pit clean-out doors manufactured by the Donley Brothers Company of Cleveland, Ohio.

The north and south wings embrace a roughly circular turn-around on the east side of the building, bordered by sandstone retaining walls and reached by a yucca-lined drive that curves down to Travis Lake Road. On the building's west side are flagstone and concrete patios and walkways. One concrete walkway descends to a roughly circular parking area in front of the boat house (inventory entry 4). Standing off the north end of the building are a modern barbecue shelter with T1-11 siding and a louvered cupola vent, and a modern garbage can shelter. Standing to the west of the building is a small wood-shingled fire hydrant housing.

Description (continued)

The Lodge was completed in 1939 for Washington, D.C. patent attorney Charles M. Thomas and his wife, Katherine Gregory. Thomas purchased Travis Lake from the Dickinson Land Corporation in 1937; in 1939, the value of buildings on his property jumped from $750 to $17,150, indicating the construction of the Lodge and associated buildings. The government purchased the 621-acre property in 1941 and used it as bachelor officers quarters, an officers dining facility and club, and temporary family housing. Local people remember boating on the lake and dancing at the Lodge during World War II. (Sources: Plaque in house; Evans, "A History of Fort A. P. Hill;" Bill Broaddus, Ken Clark, Helen Travis Crawford, and Joe Medley interviews; Winter and Pezzoni, *A Phase I Cultural Resources Inventory of Fort A. P. Hill*; Caroline County tax records, 1937-1942, and Deed Book 110, p. 61.)

3. **Bath House.** 1951. TT0252 (16-349-27). Noncontributing building.

This one-story frame building was apparently built in 1951, although it may incorporate an earlier building. The classical/colonial building has wide novelty siding that gives the effect of rustication, scalloped friezeboards, a metal-sheathed hip roof with a cupola, a round window on the north elevation, a poured concrete foundation (with evidence of alterations to the superstructure above), modernized exterior doors, fenestration, and interior, and a modern deck overlooking the lake. The bathhouse occupies the site of an early-twentieth-century picnic shelter. (Sources: Travis Lake historical description; *Richmond News Leader*, February 29 and September 29, 1952; Caroline County Deed Book 89, p. 232.)

4. **Boat House.** Fourth quarter 20th c. Noncontributing building.

One-story frame building with T1-11 siding, an asphalt-shingled front-gable roof, and a poured concrete foundation and floor.

5. **Dam.** Early twentieth century. Contributing structure.

Portions of this dam may date to the eighteenth and nineteenth centuries, but presently visible features appear to date to an early-twentieth-century reworking by mill owner F. M. Travis. Travis Lake Road passes over the dam, which has sides reinforced with granite riprap. At the dam's south end is the present spillway--identified as a "waste way" in a 1920 plat--which features a poured concrete lip and dual steel culverts passing under the road. At the dam's north end are several poured concrete features that may be associated with the F. M. Travis Mill, including a wall facing the lake with an iron handle that may have served to lift a door to permit

Description (continued)

the flow of water into the mill. (Source: Caroline County Deed Book 89, p. 232; Helen Travis Crawford interview.)

6. **Garage Apartment.** Ca. 1939. SS0253 (16-349-29). Noncontributing building.

The Thomases, owners of the Lodge at Travis Lake, employed a chauffeur who is said to have resided in the upper level of this much altered garage/apartment. In the early 1950s, a sergeant assigned to fire protection in the Travis Lake area resided in the apartment. The one-story frame dwelling sits on a concrete basement level (formerly with garage bays, now enclosed) and has an asphalt-shingled front-gable roof, vinyl siding, modern exterior doors and fenestration, and a modern front deck overlooking Travis Lake. (Sources: Travis Lake historical description; *Richmond News Leader*, February 29 and September 29, 1952.)

7. **House.** Ca. 1939. SS0254 (16-349-28). Contributing building.

This one-story frame house was probably built about 1939 as a guest cottage associated with the Lodge. It was remodeled in 1951-52 as housing for noncommissioned officers and their families. The house has vinyl siding, an asphalt-shingled hip roof, a poured concrete foundation, a brick chimney on the rear elevation, and mostly modern one-over-one-sash windows. The interior features rooms separated by French doors. It is possible the house was built in 1937 by the Dickinson Land Company. (Sources: Travis Lake historical description; *Richmond News Leader*, February 29 and September 29, 1952.)

8. **Barn.** Ca. 1939. TT0257 (16-349-30). Contributing building.

This well-preserved frame barn was probably built about 1939 to serve as stables and hay storage for the nearby Lodge. The barn has a lower level for horses (and possibly horse-drawn vehicles) and an upper level for hay storage. Other features include a metal-sheathed front-gable roof, weatherboard and vertical board sheathing, a poured concrete foundation, Dutch doors with plain strap hinges, and four-light and six-light windows. (Source: Travis Lake historical description.)

9. **Chicken House.** Ca. 1939. TT0256 (16-349-31). Contributing building.

This well-preserved frame chicken house was apparently built to serve the Lodge, located across Travis Lake. The building has a form typical of twentieth-century chicken houses: a long southern exposure with evidence of more south-facing windows than the present two, and a shed

Description (continued)

roof. Other features include metal roofing, weatherboard siding, a poured concrete foundation, and small hatches at floor level that may have enabled the resident fowl to come and go as they pleased, or that may have been used in cleaning the interior. (Source: Travis Lake historical description.)

10. **Springhouse.** Ca. 1939. TT0255 (16-349-32). Contributing structure.

This small springhouse was apparently built to serve the Lodge, located across Travis Lake. The frame building has an asphalt-shingled front-gable roof, vinyl siding, and a high poured concrete foundation. The springhouse was probably used for the preservation of milk and other perishable foods. (Source: Travis Lake historical description.)

11. **Water Point.** Third quarter 20th c. P00258. Noncontributing structure.

Small concrete-block structure apparently used as a pump house or to monitor water flow.

12. **Water Tank.** Third quarter 20th c. PFO267. Noncontributing structure.

Cylindrical steel water tank located off Spring Road near the northern boundary of the district.

13. **Privy.** Second half 20th c. Noncontributing building.

Frame latrine of standard Fort A. P. Hill form with corrugated metal siding and a shed roof. The latrine appears to be associated with a small bivouac area.

Integrity Statement

The Travis Lake Historic District possesses good over-all architectural and historical integrity. The district's principal architectural resource--the 1938-39 Lodge--retains its original spatial configuration and exterior and interior features and finishes. The only substantive modern changes to the building are the substitution of modern thermal casement windows for the original casements, and the conversion of the porch overlooking Travis Lake into a dining room (this latter change did not compromise the original log porch supports and flagstone floor and is therefore reversible.) The farm and residential buildings associated with the Lodge display varying degrees of exterior architectural integrity, but most retain their distinguishing architectural features. The wooded character of the shores of Travis Lake, and historic drives,

Description (continued)

stone retaining walls, and other landscape features contribute to the high integrity of the district's setting.

The resource count in section 5 shows seven contributing resources and six noncontributing resources, which, superficially, is a poor contributing ratio. The ratio is skewed by including in the count small, modern, noncontributing auxiliary buildings and structures such as the boat house, privy, and water point. The two principal contributing resources--the Lodge and Travis Lake--constitute the major character-defining features of the district.

Architectural Analysis

The Travis Lake Historic District has been the scene of continuous development since at least the late antebellum period. In 1864, Saunders Mill occupied a mill seat on the headwaters of Goldenvale Creek, its mill pond corresponding to the upper section of the present Travis Lake.[1] By 1920, the property had passed to local merchant F. M. Travis. A plat from the period (included as Exhibit B) shows the mill--probably a relatively small building--perched towards the north end of a mill dam with a "waste-way" or overflow outlet at the dam's south end. On the hillside north of the dam stood the miller's house. An icehouse at the south end of the pond suggests another commercial use for the property, and a "picnic hall" near the location of the present bath house provides the first evidence for recreational activity at the pond.[2]

The architectural character of the lake was transformed in the late 1930s when Washington attorney Charles M. Thomas and his wife Katherine Gregory acquired the property. The Thomases constructed the Lodge in 1938-39, a rambling retreat overlooking the lake, with saddle-notched log walls, log porch posts, substantial stone chimneys, and other elements of the Rustic Style.[3] The Lodge harmonizes with its natural surroundings, augmented by the sandstone retaining walls and flagstone walkways that connect the building to the lake shore and to other outdoor spaces.[4] In architectural counterpoint to the Lodge stands the 1951 Bath House, a whimsical building with vaguely Classical or Colonial Revival features such as a cupola, a round window, and wide novelty siding. The other buildings associated with the Lodge--the two secondary residences and the farm buildings--are more modest in character, although their picturesque hillside siting contributes to the overall character of the complex.[5]

Description (continued)

Endnotes

1. "Map of Caroline County." The mill seat and pond were probably used earlier, probably by Benjamin Robinson, who operated a mill on Goldenvale Creek (Winter and Pezzoni, *Phase I Cultural Resources Inventory of Fort A. P. Hill*, 17). A 1920 plat shows an "old dam" downstream from the Saunders mill dam, in the general vicinity of the present crossing of Goldenvale Creek by the Engineer Road (Caroline County Deed Book 89, p. 232.) The bed of Engineer Road occupies a dam that impounds the lower part of Travis Lake, formed after 1950.

2. Caroline County Deed Book 89, p. 232. The plat, a 1920 revision of an 1893 plat, was drawn by F. M. Travis, who served as the county surveyor. The Travis Mill may have resembled the Moses Rolph grist mill near the Caroline County community of Sparta, a small, weatherboarded, frame building from the late nineteenth century pictured in Haley, *Caroline County: A Pictorial History*, 34. Above-ground remains of the ice house, miller's house, and picnic hall are apparently gone, although it is not inconceivable that elements of the latter two buildings are incorporated into buildings presently standing in the district.

3. The Lodge is the preeminent Rustic-style building in Caroline County, Virginia. An architectural survey of the county conducted in the early 1990s identified no other significant Rustic-style buildings (see PMA and Traceries, *Historic Architectural Survey of Caroline County*.)

4. Because the Lodge was occupied by the non-local Thomas family for only two years, little oral information is available on the construction of the building. An architect presumably designed the Lodge, probably one with offices in Washington, where the Thomases maintained their principal residence during the 1930s. A cursory search through back issues of *The Caroline Progress* failed to turn up information on the building. Some of the walls and walkways associated with the Lodge may have been constructed by the army--the lakeside parking area, for example, which would have accommodated the many individuals who frequented the Lodge during World War II.

5. Some of these buildings may actually have been built by the Dickinson Land Company, which owned Travis Lake from 1929 to 1937 and which owned buildings valued at $750 in 1937 (Caroline County tax records).

NARRATIVE STATEMENT OF SIGNIFICANCE

Summary

The Travis Lake Historic District, located at Fort A. P. Hill in Caroline County, Virginia, includes a range of historic resources dating from the antebellum period to the 1930s. The dominant feature of the approximately 150-acre district is Travis Lake itself, an antebellum mill pond bordered by mixed deciduous and conifer forest. In the late 1930s, the lake attracted the attention of Washington, D.C., attorney Charles M. Thomas, who built a rustic log lodge above the mill dam. When the area became part of the A. P. Hill Military Reservation in 1941, the lodge was converted to use as an officers club and quarters, and the lake and its wooded surroundings afforded recreational opportunities to army personnel. Lake Travis, the Lodge, and associated domestic and farm buildings today form one of the most intact historic resources at Fort A. P. Hill.

Justification of Criteria

The Travis Lake Historic District is eligible for the National Register of Historic Places under criteria A and C in the areas of architecture and military history. Travis Lake, with its forested shores, and the Rustic-style residence known as the Lodge together form an ensemble of considerable architectural sophistication. The architectural effect of the Lodge relies on its natural surroundings; likewise, the scenic qualities of the lake are complemented by the Lodge. The lake and lodge also figured in the Second World War history of the A. P. Hill Military Reservation by providing recreational opportunities to base personnel, thus playing a part in A. P. Hill's important contribution to the war effort. The period of significance for the district extends from 1864, the date of the earliest known documentation of the physical character of Travis Lake, to 1945, encompassing the Second World War history of the area. The district is eligible at the local level of significance.

Acknowledgments

A number of individuals and organizations assisted in the preparation of this report. Terry Banks and Evelyn Peyton served as contacts for the Fort A. P. Hill Environmental Office. Len Winter and Ashley Neville served as the contacts for Gray & Pape, Inc. and reviewed the draft nomination. Others who provided assistance include Bill Broaddus and Helen Travis Crawford, descendents of former landowners in the district, Tim Bradley of the U.S. District Court in Washington, D.C., Judith Zvonkin of the Biography Division of the Washington, D.C., Public Library, Pat Jordan of the U.S. Patent Office, Bryson Clevinger of the Alderman Library, University of Virginia, and the staffs of the Caroline County Clerk of Court office, *The Caroline*

Statement of Significance (continued)

Progress, the Roanoke Public Library, and the Library of Virginia.

Historical Background

The upper part of Travis Lake corresponds to the antebellum Saunders Mill Pond, which appears on an 1864 map of Caroline County. A pond associated with the mill of Benjamin Robinson may have occupied the site in the 1700s.[1] After a period of apparent disuse following the Civil War, Francis Marion Travis (ca. 1849-1925) operated a mill at the pond in the 1890s. Travis, described as a "prominent merchant of New London [a nearby post office]," apparently ran his grist and sawmill until the 1920s.[2] The scenic qualities of the pond were acknowledged early. By 1920, a "picnic hall" had been constructed on a knoll overlooking the pond near the site of the present bath house.[3] In 1929, Harold V. Dickinson, of New York, purchased the pond and adjoining acreage, land which he transferred to the Dickinson Land Company. The land company may have intended to resell the property soon after purchase, but the stock market crash of 1929 and the ensuing depression intervened. In 1936 or 1937, the company added a building or buildings to the property (boosting the value of buildings from $300 to $750), and in October 1937 the property was sold to Charles M. Thomas, of Washington, D.C.[4]

Charles McGill Thomas, a patent attorney, maintained an office in Washington from at least the late 1920s to 1963.[5] With his wife, Katherine Gregory, Thomas constructed a rustic summer retreat--later known as the Lodge--on the east shore of Travis Lake in 1938-39. The Thomases also apparently constructed the house, garage apartment (said to have been occupied by their chauffeur), and farm buildings at the north end of the dam, opposite the Lodge.[6] Their enjoyment of the Lodge proved short-lived; in 1941, the U.S. Army acquired the Thomas property and much of northeast Caroline County to form the A. P. Hill Military Reservation. A. P. Hill played an important role in the defensive and offensive operations of the United States military during World War II. The base provided the army much-needed maneuver and range area, and it was instrumental in training the forces that fought in North Africa and participated in the D-Day invasion--campaigns that contributed to the Allied victory over Nazi Germany.[7]

During World War II, Travis Lake provided recreational opportunities to military personnel and local civilians. Helen Travis Crawford, granddaughter of F. M. Travis, recalls attending dances at the Lodge and boating on the lake.[8] At various times during and after the war, the Lodge was used as temporary family housing, bachelor officer quarters, and an officers's open mess. In 1952, as part of a government probe of military spending, a U.S. representative alleged that the commanding general of the Second Army improperly spent $27,000 to refurbish the building as

Statement of Significance (continued)

his "personal hunting lodge." The same representative charged that "high Pentagon brass" and their "lady friends" attended parties at the building. The army replied that the Lodge was indeed used for parties and dances, since it served as the post Officers Club, but that only $2,630 had been spent on its upkeep since 1941, and that part of that expense was offset by billeting fees paid by personnel quartered in the building.[9] In later years, rooms at the Lodge were rented out to sportsmen who fished and hunted at the lake.[10] Today, the Lodge continues to serve its original function as a retreat, available to military personnel and civilians, and boating and fishing facilities are available on Travis Lake. The area is now included in a wildlife refuge administered by the Army.

Statement of Significance (continued)

Endnotes

1. Winter and Pezzoni, "Phase I Cultural Resources Inventory of Fort A. P. Hill," 17-18; "Map of Caroline County."

2. Caroline County Deed Book 89, p. 232; *Virginia State Gazetteer*; and *Caroline Progress*, June 22, 1933.

3. Caroline County Deed Book 89, p. 232.

4. Caroline County Deed Book 99, pp. 45, 46, 146 and 182; Deed Book 110, p. 61; and tax records for 1936 and 1937.

5. *Confidential Supplement*, 1548; Pat Jordan, personal communication. Thomas last registered with the U.S. Patent Office in 1963, at which time his professional address was 310 Shoreham Building, Washington, D.C. Attempts to uncover more information on Thomas from libraries, circuit courts, and state and district bars and bar associations in Virginia and Washington proved unsuccessful.

6. Bill Broaddus, personal communication; Caroline County tax records. The 1939 land book registered a jump in the value of buildings on the property from $750 to $17,150.

7. Winter and Pezzoni, *Phase I Cultural Resources Inventory of Fort A. P. Hill*, 100.

8. Helen Travis Crawford, personal communication.

9. *Richmond News Leader*, February 29 and September 29, 1952.

10. *Washington Post*, February 5, 1968. In 1968, the daily fee for a bed at the Lodge was $1.00 and board was $1.60.

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Virginia State Gazetteer and Business Directory, 1897-'98. Richmond: Hill Printing Co.,1896.

Washington Post (Washington, D.C.).

Winter, Len and J. Daniel Pezzoni. "A Phase I Cultural Resource Inventory of Fort A.P. Hill, Caroline County, Virginia." Richmond, Va.: Gray & Pape, Inc., 1994.

Wise, H. Alexander, Jr., Director, Virginia Department of Historic Resources, to Terry Banks, Fort A. P. Hill Environmental Office, July 10, 1995. Correspondence.

UTM References (continued)

5. E295490 N4223970 6. E295040 N4224330 7. E295120 N4224120

Verbal Boundary Description

The boundaries of the Travis Lake Historic District lie 500' beyond--parallel and concentric to--the loop traced by Travis Lake Road and the gravel road that follows the lake shore, as illustrated in Exhibit A. The boundaries are likely to include unidentified prehistoric and historic archaeological sites.

Boundary Justification

The boundaries of the Travis Lake Historic District are defined so as to include the buildings, lake, and wooded lake shores--the lake's viewshed--that together form a harmonious architectural whole. Rather than being passive setting unassociated with the historic and architectural character of the district's buildings, the lake and surrounding woods contribute directly to the architectural significance of the resource, thus warranting the inclusion of a relatively large acreage. The lower part of Travis Lake, because it dates to after the period of significance, is not included in the district, except for that portion that lies within 500' of Travis Lake Road.

PHOTOGRAPHS

All photographs are of: Travis Lake Historic District, VDHR # 16-349-23

1. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: East elevation of the Lodge; view facing west.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-349-23
PHOTO 1 of 8

2. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: West elevation of the Lodge; view facing north.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-349-23
PHOTO 2 of 8

3. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: Bath House; view facing south.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-349-23
PHOTO 3 of 8

4. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: House (left) and Chauffeur's House (right); view facing west.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-349-23
PHOTO 4 of 8

Photographs (continued)

5. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: Barn; view facing east.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-349-23
PHOTO 5 of 8

6. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: Travis Lake with dam in distance; view facing east.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-349-23
PHOTO 6 of 8

7. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: Travis Lake; lower part with dam in center; view facing west.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-349-23
PHOTO 7 of 8

8. CREDIT: J. Daniel Pezzoni
DATE: 1995
NEGATIVE FILED: Virginia State Library, Richmond, Va.
VIEW OF: Travis Lake, Liberty Branch inlet; view facing south.
NEG. NO.: VDHR # 14164
FILE NO.: VDHR # 16-349-23
PHOTO 8 of 8

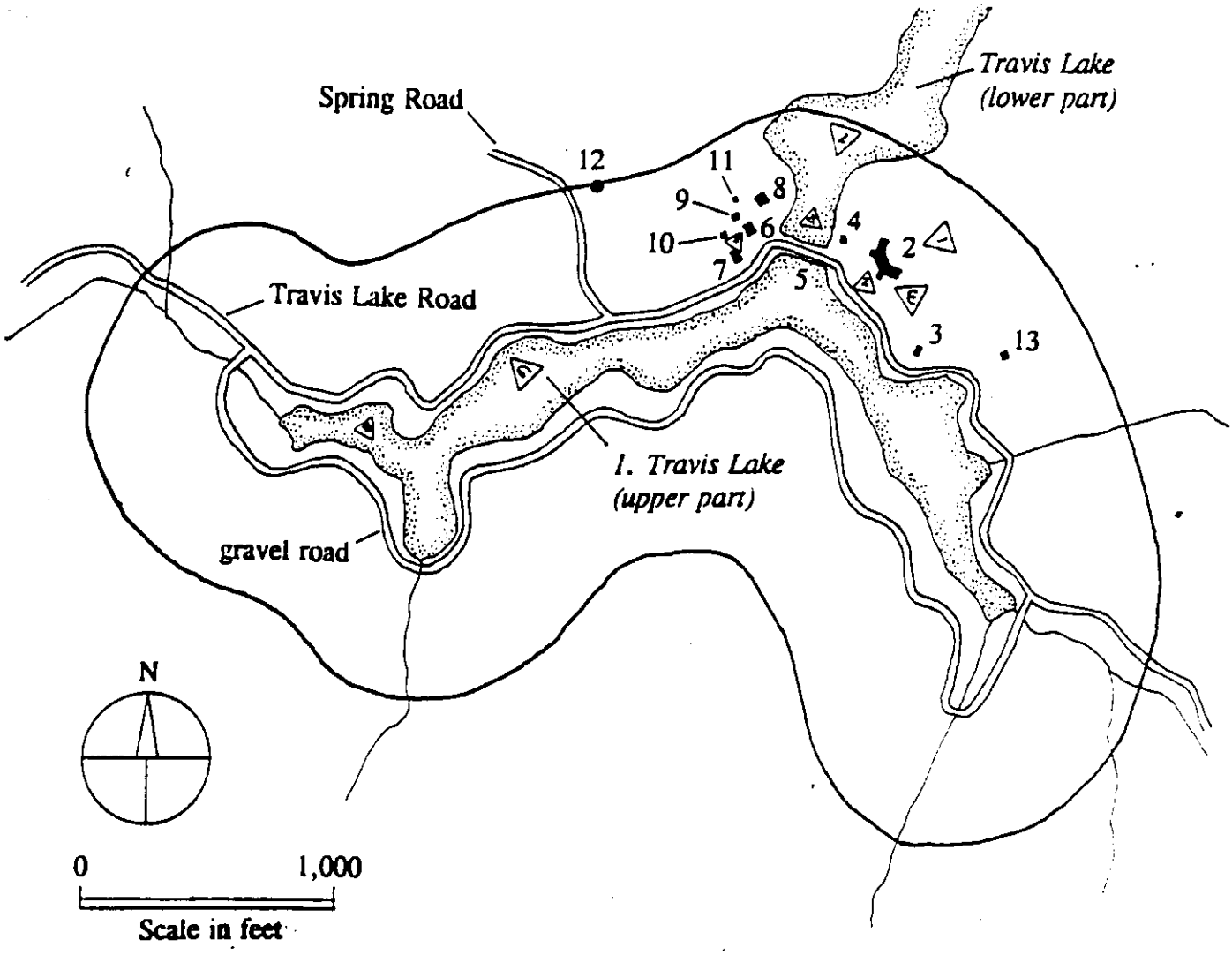


Exhibit A. Travis Lake Historic District. Boundaries indicated by heavy line. Triangles indicate number and direction of view of photographs accompanying the report. Key to buildings and structures:

16-5009 – 1. Travis Lake
– 2. The Lodge
– 3. Bath House
– 4. Boat House
– 5. Dam
– 6. Garage Apt.
– 7. House
– 8. Barn
– 9. Chicken House
– 10. Springhouse
– 11. Water Point
– 12. Water Tank
– 13. Privy

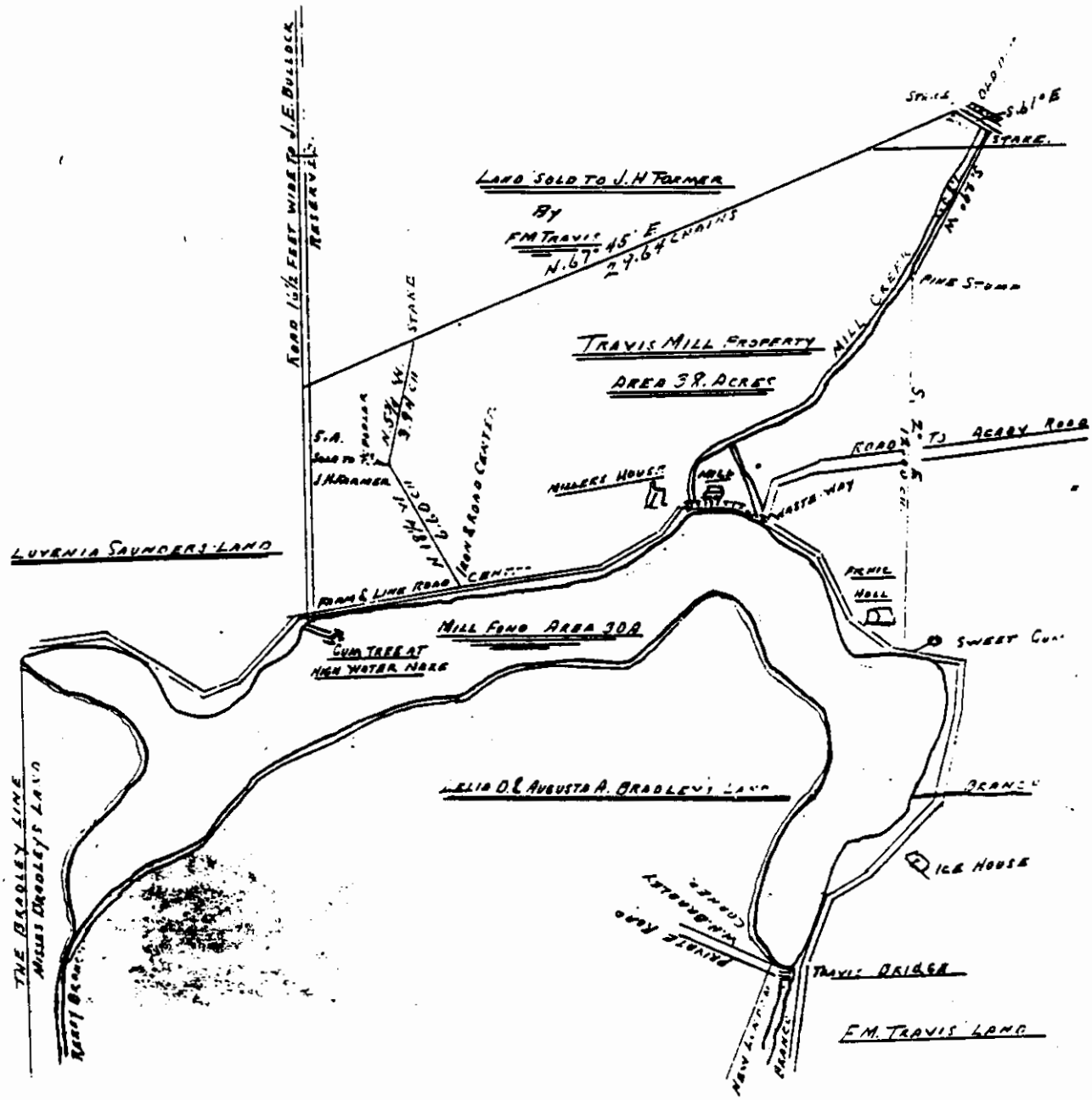


Exhibit B. Detail of a 1920 plat showing Travis Lake and associated resources from Caroline County Deed Book 89, p. 232. North is toward the top of the sheet. Not to scale.

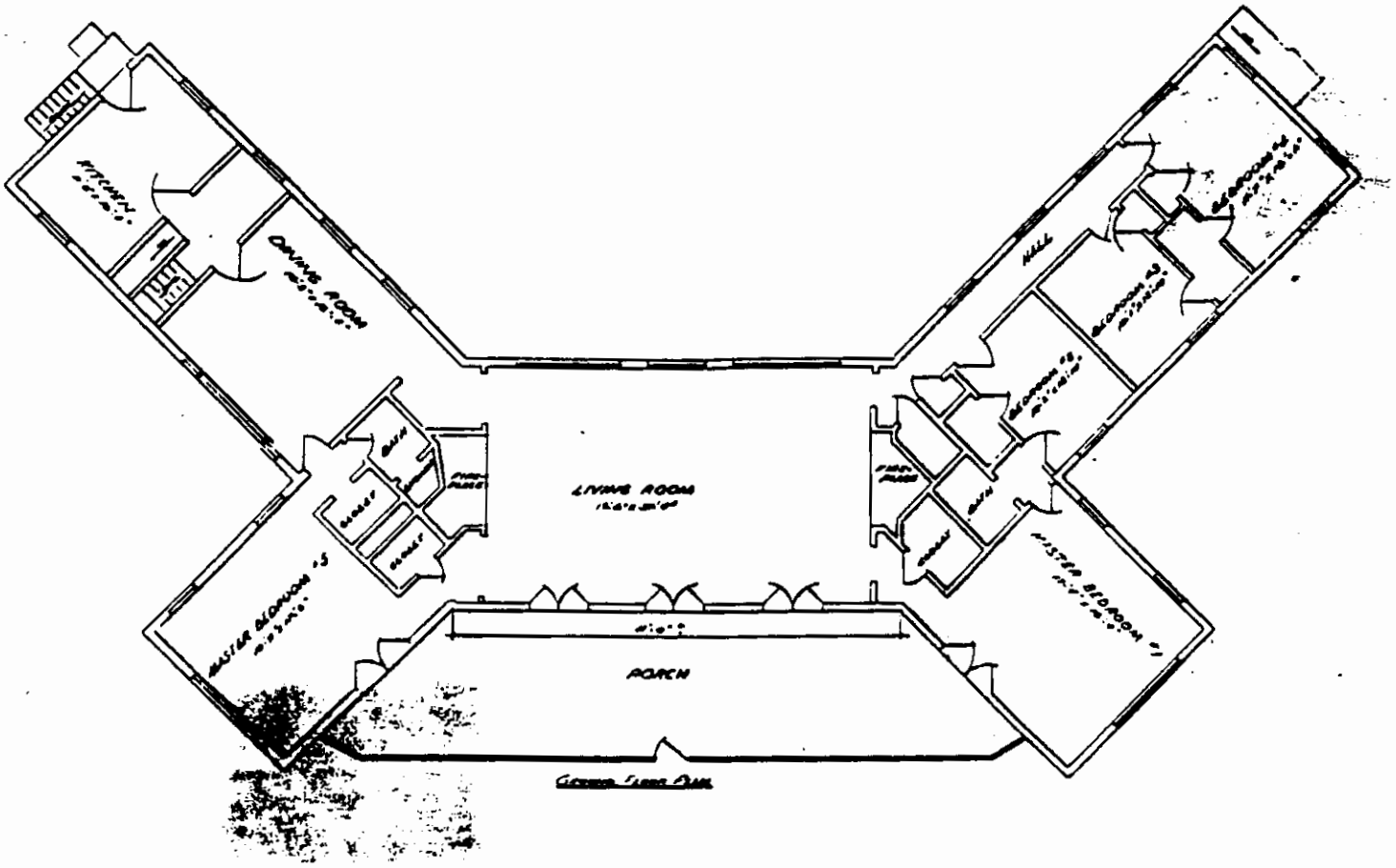
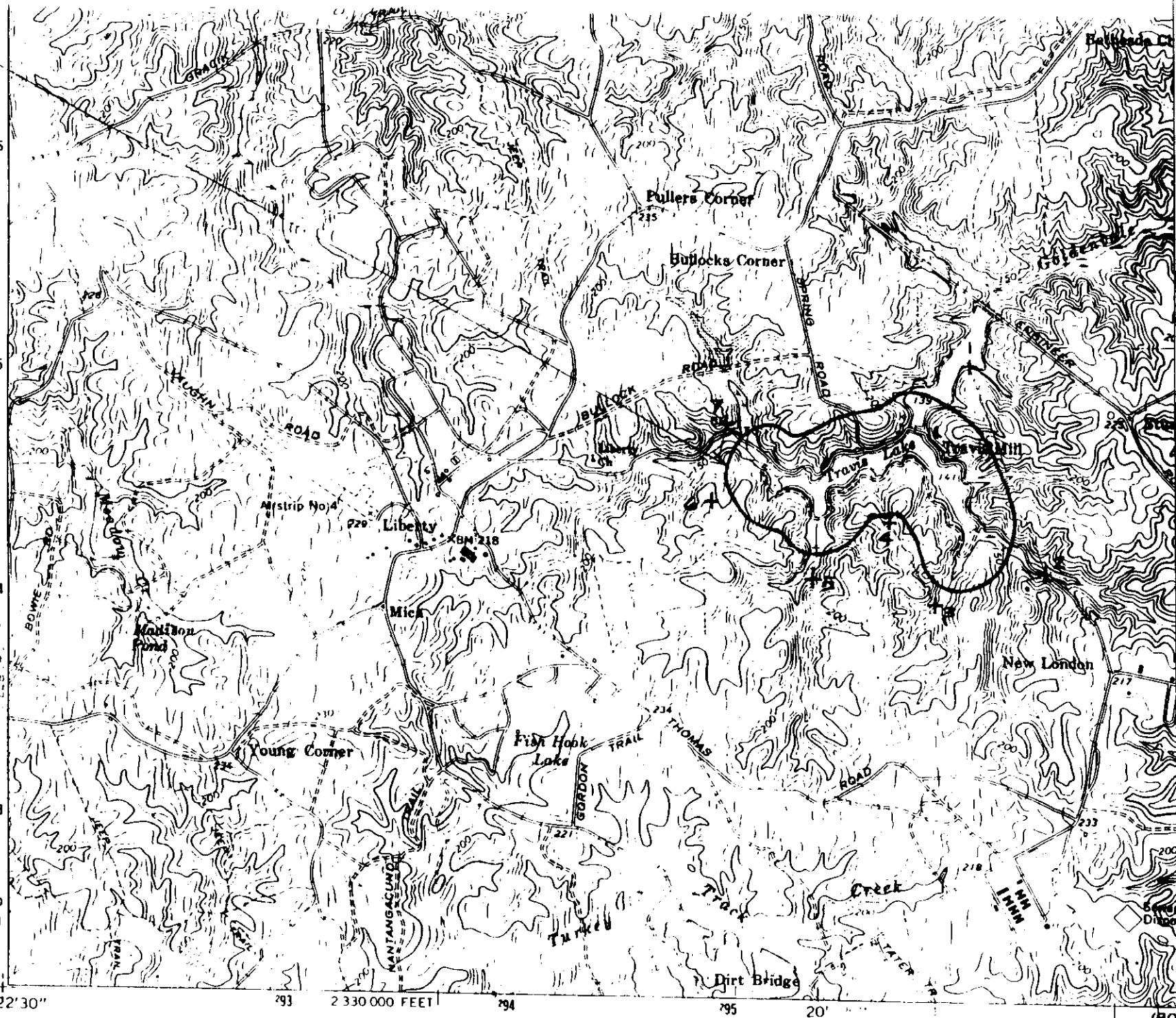


Exhibit C. The Lodge floor plan adapted from "Floor Layout SS0251," Drawing No. 36-76 from Fort A. P. Hill buildings and grounds records. Scale: 1" = 16'-6".

TRAVIS LAKE.
HISTORIC DISTRICT
Ft. A.P. Hill, Caroline
Co., VA

UTM ref.s (zone 18):
1. E296220 N4224920
2. E296550 N4223990
3. E296150 N4223850
4. E295840 N4224230
5. E295490 N4223970
6. E295040 N4224330
7. E295120 N4224120

016-5009



Mapped, edited, and published by the Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1966. Field checked 1969

(WOODFORD) 5569 III SW

MN GN

1000 0 1000 2000

APPENDIX N

Cultural Resources Surveys List

CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-7901-01	1979 Nov	An Archaeological and Historical Survey of Fort A P. Hill, Virginia	Southside Historical Sites, Inc.	44CE0031; 44CE0032; 44CE0039; 44CE0040; 44CE0041; 44CE0042; 44CE0043; 44CE0044; 44CE0045; 44CE0046; 44CE0047; 44CE0048; 44CE0049; 44CE0050; 44CE0051; 44CE0052; 44CE0053; 44CE0054; 44CE0055; 44CE0056; 44CE0057; 44CE0058; 44CE0059; 44CE0060; 44CE0061; 44CE0062; 44CE0063; 44CE0064; 44CE0065; 44CE0066; 44CE0067; 44CE0068; 44CE0069; 44CE0070; 44CE0071; 44CE0072; 44CE0073; 44CE0074; 44CE0075; 44CE0076; 44CE0077; 44CE0078; 44CE0079; 44CE0080; 44CE0081; 44CE0082; 44CE0083; 44CE0084; 44CE0085; 44CE0086; 44CE0087		Installation Survey
CRM-8301-01	1983 Jun	Archaeological Investigations at Fort A.P. Hill, Caroline County, Virginia	Mid-Atlantic Archaeological Research, Inc.	44CE0031; 44CE0032; 44CE0039; 44CE0047; 44CE0049; 44CE0050; 44CE0053; 44CE0055; 44CE0059; 44CE0061; 44CE0065; 44CE0072; 44CE0074; 44CE0076; 44CE0077; 44CE0085; 44CE0086; 44CE0110; 44CE0115; 44CE0116; 44CE0117; 44CE0118; 44CE0119; 44CE0120; 44CE0121; 44CE0122; 44CE0123; 44CE0124; 44CE0125; 44CE0126; 44CE0127; 44CE0128; 44CE0129; 44CE0130; 44CE0131; 44CE0132		Installation Survey
CRM-9101-01	1991 Jun	An Archaeological Survey of a Proposed Ammunition Storage Point, Fort A P. Hill, Virginia	New South Associates			ASP Survey
CRM-9102-01	1991 Sep	Phase 1 Archaeological Survey of Proposed Construction at Fort A P. Hill	Virginia Commonwealth University Archaeological Research Center			Virginia Military Academy/Infantry Training Detachment training site.
CRM-9201-01	1992 Jun	A Phase I Cultural Resource Survey of Property on Fort A.P. Hill, Caroline County, Virginia	William & Mary Center for Archaeological Research			Vehicle Wash Station
CRM-9301-01	1993 May	Phase I Cultural Resources Survey, Caroline County Regional Jail Site, Fort A P. Hill, Caroline County, Virginia	Louis Berger & Associates	44CE0275; 44CE0276; 44CE0277; 44CE0278; 44CE0279; 44CE0280; 44CE0281; 44CE0282		Caroline County Regional Jail
CRM-9401-01	1994 Mar	Phase IB Archaeological Survey of Selected Log Landing Areas at Fort A P. Hill, Caroline County, Virginia	Dames & Moore			Log Landing Areas
CRM-9402-01	1994 Dec	A Phase I Cultural Resources Inventory of Fort A.P. Hill, Caroline County, Virginia	Gray & Pape, Inc.	44CE0289; 44CE0290; 44CE0291; 44CE0292; 44CE0293; 44CE0294; 44CE0295; 44CE0296; 44CE0297; 44CE0298; 44CE0299; 44CE0300; 44CE0301; 44CE0302; 44CE0303; 44CE0304; 44CE0305; 44CE0306; 44CE0307	016-0069; 016-0349-0001; 016-0349-0002; 016-0349-0003; 016-0349-0004; 016-0349-0005; 016-0349-0006; 016-0349-0007; 016-0349-0008; 016-0349-0009; 016-0349-0010; 016-0349-0011; 016-0349-0012; 016-0349-0013; 016-0349-0014; 016-0349-0015; 016-0349-0016; 016-0349-0017; 016-0349-0018; 016-0349-0019; 016-0349-0020; 016-0349-0021; 016-0349-0022; 016-0349-0023; 016-0349-0024; 016-0349-0025; 016-0349-0026; 016-0349-0027; 016-0349-0028; 016-0349-0029; 016-0349-0030; 016-0349-0031; 016-0349-0032; 016-0349-0033; 016-0349-0034; 016-0349-0035	Installation Cultural Resource Survey
CRM-9601-01	1996 Mar	A Phase I Cultural Resources Investigation of the Cabin Tract at Fort A.P. Hill, Caroline County, Virginia	Gray & Pape, Inc.			Cabin Tract

CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-9701-01	1997 Jul	Cultural Resources Digital Mapping for Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0005; 44CE0031; 44CE0032; 44CE0039; 44CE0040; 44CE0041; 44CE0042; 44CE0043; 44CE0044; 44CE0045; 44CE0046; 44CE0047; 44CE0048; 44CE0049; 44CE0050; 44CE0051; 44CE0052; 44CE0053; 44CE0054; 44CE0055; 44CE0056; 44CE0057; 44CE0058; 44CE0059; 44CE0060; 44CE0061; 44CE0062; 44CE0063; 44CE0064; 44CE0065; 44CE0066; 44CE0067; 44CE0068; 44CE0069; 44CE0070; 44CE0071; 44CE0072; 44CE0073; 44CE0074; 44CE0075; 44CE0076; 44CE0077; 44CE0078; 44CE0079; 44CE0080; 44CE0081; 44CE0082; 44CE0083; 44CE0084; 44CE0085; 44CE0086; 44CE0087; 44CE0110; 44CE0115; 44CE0116; 44CE0117; 44CE0118; 44CE0119; 44CE0120; 44CE0121; 44CE0122; 44CE0123; 44CE0124; 44CE0125; 44CE0126; 44CE0127; 44CE0128; 44CE0129; 44CE0130; 44CE0131; 44CE0132; 44CE0138; 44CE0275; 44CE0276; 44CE0277; 44CE0278; 44CE0279; 44CE0280; 44CE0281; 44CE0282; 44CE0289; 44CE0290; 44CE0291; 44CE0292; 44CE0293; 44CE0294; 44CE0295; 44CE0296; 44CE0297; 44CE0298; 44CE0299; 44CE0300; 44CE0301; 44CE0302; 44CE0303; 44CE0304; 44CE0305; 44CE0306; 44CE0307		Digital Mapping
CRM-9801-01	1998 Mar	Cultural Resources Assessment on 27,000 Acres South of Route 301, Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.			Range Assessments
CRM-9802-01	1998 Apr	Archival Assessment for the Range 24 Upgrade at Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.			Range 24 upgrade
CRM-9901-01	1999 Jul	An Assessment of Five Civil War Period Military Sites at Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0031; 44CE0323; 44CE0325		Civil War Survey
CRM-9902-01	1999 Jul	Phase I Survey for Approximately 390 Acres at Fort A P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0323; 44CE0324; 44CE0327; 44CE0328; 44CE0329; 44CE0330		Boy Scout Jamboree area
CRM-9903-01	1999 Aug	Assessment of 21 Cemetery Locations at Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.			Civil War Survey
CRM-0003-01	2000 May	Phase I Survey for Approximately 20 Acres and a Phase II Evaluation at Site 44CE335 at Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0053; 44CE0335		MAC and MOUT site
CRM-0001-01	2000 Jun	Phase I Survey of Approximately 200 Acres, Boy Scout Jamboree Area at Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0336; 44CE0337; 44CE0338; 44CE0339; 44CE0340; 44CE0341; 44CE0342		Boy Scout Jamboree area
CRM-0002-01	2000 Oct	Phase I Survey for the Army Reserve Center Site at Fort A P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0343; 44CE0366		Army Reserve Center

CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-0004-01	2000 Dec	Integrated Cultural Resources Management Plan, Fort A P. Hill, Caroline County, Virginia.	Cultural Resources, Inc.	44CE0040; 44CE0041; 44CE0042; 44CE0043; 44CE0044; 44CE0045; 44CE0046; 44CE0047; 44CE0048; 44CE0049; 44CE0050; 44CE0051; 44CE0052; 44CE0053; 44CE0054; 44CE0055; 44CE0056; 44CE0057; 44CE0058; 44CE0059; 44CE0060; 44CE0061; 44CE0062; 44CE0063; 44CE0064; 44CE0065; 44CE0066; 44CE0067; 44CE0068; 44CE0069; 44CE0070; 44CE0071; 44CE0072; 44CE0073; 44CE0074; 44CE0075; 44CE0076; 44CE0077; 44CE0078; 44CE0079; 44CE0080; 44CE0081; 44CE0082; 44CE0083; 44CE0084; 44CE0085; 44CE0086; 44CE0087; 44CE0110; 44CE0115; 44CE0116; 44CE0117; 44CE0118; 44CE0119; 44CE0120; 44CE0121; 44CE0122; 44CE0123; 44CE0124; 44CE0125; 44CE0126; 44CE0127; 44CE0128; 44CE0129; 44CE0130; 44CE0131; 44CE0132; 44CE0138; 44CE0275; 44CE0276; 44CE0277; 44CE0278; 44CE0279; 44CE0280; 44CE0281; 44CE0282; 44CE0289; 44CE0290; 44CE0291; 44CE0292; 44CE0293; 44CE0294; 44CE0295; 44CE0296; 44CE0297; 44CE0298; 44CE0299; 44CE0300; 44CE0301; 44CE0302; 44CE0303; 44CE0304; 44CE0305; 44CE0306; 44CE0307; 44CE0323; 44CE0324; 44CE0325; 44CE0326; 44CE0327; 44CE0328; 44CE0329; 44CE0330; 44CE0335; 44CE0336; 44CE0337; 44CE0338; 44CE0339; 44CE0340; 44CE0341; 44CE0342; 44CE0343; 44CE0344; 44CE0345; 44CE0346; 44CE0347; 44CE0348; 44CE0349; 44CE0350; 44CE0351; 44CE0352; 44CE0353; 44CE0354; 44CE0355; 44CE0356; 44CE0357; 44CE0358; 44CE0359;	016-0052; 016-0069; 016-0075; 016-0140; 016-0145; 016-0349-0001; 016-0349-0002; 016-0349-0003; 016-0349-0004; 016-0349-0005; 016-0349-0006; 016-0349-0007; 016-0349-0008; 016-0349-0009; 016-0349-0010; 016-0349-0011; 016-0349-0012; 016-0349-0013; 016-0349-0014; 016-0349-0015; 016-0349-0016; 016-0349-0017; 016-0349-0018; 016-0349-0019; 016-0349-0020; 016-0349-0021; 016-0349-0022; 016-0349-0023; 016-0349-0024; 016-0349-0025; 016-0349-0026; 016-0349-0027; 016-0349-0028; 016-0349-0029; 016-0349-0030; 016-0349-0031; 016-0349-0032; 016-0349-0033; 016-0349-0034; 016-0349-0035	ICRMP 2000
CRM-0005-01	2000 Dec	Cultural Resources Assessment for Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.			Projected Resources
CRM-0101-01	2001 Mar	Site Assessments of 33 Archaeological Sites at Fort A P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0031; 44CE0045; 44CE0046; 44CE0048; 44CE0049; 44CE0050; 44CE0052; 44CE0054; 44CE0056; 44CE0060; 44CE0062; 44CE0063; 44CE0064; 44CE0065; 44CE0066; 44CE0067; 44CE0068; 44CE0069; 44CE0070; 44CE0071; 44CE0072; 44CE0073; 44CE0075; 44CE0079; 44CE0080; 44CE0081; 44CE0082; 44CE0083; 44CE0084; 44CE0087; 44CE0110; 44CE0116; 44CE0117		site verification

CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-0102-01	2001 Mar	Civil War Period Resources Survey for Fort A P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0344; 44CE0345; 44CE0346; 44CE0347; 44CE0348; 44CE0349; 44CE0350; 44CE0351; 44CE0352; 44CE0353; 44CE0354; 44CE0355; 44CE0356; 44CE0357; 44CE0358; 44CE0359; 44CE0360; 44CE0361; 44CE0362; 44CE0363; 44CE0364; 44CE0365; 44CE0367; 44CE0368; 44CE0369; 44CE0370; 44CE0371; 44CE0372; 44CE0373; 44CE0374; 44CE0375; 44CE0376; 44CE0377; 44CE0378; 44CE0379; 44CE0380; 44CE0381; 44CE0382; 44CE0383; 44CE0384; 44CE0385; 44CE0386; 44CE0387; 44CE0388; 44CE0389; 44CE0390; 44CE0391; 44CE0392; 44CE0393; 44CE0394; 44CE0395; 44CE0396; 44CE0397; 44CE0398; 44CE0399; 44CE0400; 44CE0401; 44CE0402; 44CE0403; 44CE0404; 44CE0405; 44CE0406; 44CE0407; 44CE0408; 44CE0409; 44CE0410; 44CE0411; 44CE0412; 44CE0413; 44CE0414; 44CE0415; 44CE0416; 44CE0417; 44CE0418; 44CE0419		Civil War Survey
CRM-0103-01	2001 Nov	Phase I Cultural Survey for the Proposed 25-Acre BATF Range, Fort A P. Hill, Caroline County, Virginia	Cultural Resources, Inc.			BATF Range
CRM-0201-01	2002 Dec	Phase I Archaeological Survey of the Proposed Maneuver Corridors at Fort A.P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0425; 44CE0426; 44CE0427; 44CE0428		Maneuver Corridors A,B,C
CRM-0301-02	2003 Jan	Phase III Data Recovery at Site 44CD326, Fort A P. Hill, Caroline County, Virginia	Cultural Resources, Inc.	44CE0326		Cemetery removal project
CRM-0401-01	2003 Feb	Cultural Resource Survey for the Emergency Services Center, Fort A P. Hill, Caroline County, Virginia	John Milner Associates, Inc.			Emergency Services Center
CRM-0202-02	2003 Oct	Phase II Archaeological Evaluation of Sites 44CE426 and 44CE427, Fort A.P. Hill Maneuver Corridors, Caroline County, Virginia	Cultural Resources, Inc.	44CE0426; 44CE0427		Maneuver Corridors A,B,C
CRM-0302-01	2003 Oct	Model for Potential Cultural Resources, Fort A P. Hill, Caroline County, Virginia	Cultural Resources, Inc.			Predictive Model
CRM-0303-01	2003 Dec	Phase IA Archeological Evaluation of the Firing Points 18, 28, and 50 and Range 33, Fort A.P. Hill, Virginia	Thunderbird Archeological Associates, Inc.	44CE0432		Firing Points 18, 28, 50 & Range 33
CRM-0402-04	2004 Jun	Phase I and II Cultural Resources Survey and Assessment of the Shoot House and Urban Assault Compound and Testing of Site 44CE0430, Fort A.P. Hill, Caroline County, Virginia	Gray & Pape, Inc.	44CE0429; 44CE0430		Shoot House/UAC
CRM-0403-01	2004 Oct	A Reconnaissance Architectural Survey of Fort A P. Hill in Caroline County, Virginia	Gray & Pape, Inc.		016-0349-0016; 016-0349-0036; 016-0349-0037; 016-0349-0038; 016-0349-0039; 016-0349-0040; 016-0349-0041; 016-0349-0042; 016-0349-0043; 016-0349-0044; 016-0349-0045; 016-0349-0046; 016-0349-0047; 016-0349-0048; 016-0349-0049; 016-0349-0050; 016-0349-0051; 016-0349-0052; 016-0349-0053; 016-0349-0054; 016-0349-0055; 016-0349-0056; 016-0349-0057	Installation Architectural Survey
CRM-0501-02	2005 Jan	A Cultural Resources Survey (Phase I) for Portions of the Boy Scouts of America Jamboree Grounds, Caroline County, Virginia	Gray & Pape, Inc.	44CE0431		BSA Jamboree Site
CRM-0502-02	2005 Jan	A Phase I Cultural Resources Survey of the Modified Record Firing Range, Fort A P. Hill, Caroline County, Virginia	Gray & Pape, Inc.			Modified Record Firing Range
CRM-0503-01	2005 Jun	A Cultural Resources Reconnaissance (Phase IA) Survey for the Proposed Villeboro Vehicle Inspection Area, Fort A.P. Hill, Virginia	Gray & Pape, Inc.			Vehicle Inspection Area
CRM-0504-02	2005 Jul	Supplemental Phase I Archaeological Survey for the Proposed Combined Arms Collective Training Facility (CACTF), Fort A P. Hill, Virginia	Gray & Pape, Inc.			CACTF

CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-0505-01	2005 Sep	Condition Assessment	John Milner Associates, Inc.		016-0069; 016-0349-0023; 016-0349-0027; 016-0349-0028; 016-0349-0029; 016-0349-0030	Building Assessment
CRM-0601-02	2006 Aug	Phase IA Archaeological Reconnaissance of the Proposed 800 Meter Range and a Phase I Archaeological Survey of the Proposed Demo Range Area, Fort A P. Hill, Caroline County, Virginia	Gray & Pape, Inc.	44CE0462; 44CE0463; 44CE0464; 44CE0465		AWG Ranges
CRM-0602-02	2006 Aug	Phase I Archaeological Survey of the Proposed Asymmetrical Warfare Group (AWG) Training Facility, Fort A.P. Hill, Caroline County, Virginia	Gray & Pape, Inc.	44CE0051; 44CE0466; 44CE0467; 44CE0468		AWG Facilities
CRM-0603-01	2006 Nov	Phase II Archaeological Evaluation of Site 44CE465, Proposed 800-Meter Range, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0465		800-meter range Phase II
CRM-0604-01	2006 Dec	Archaeological Survey, Proposed Forestery Activities, Nine Blocks in the Impact Area, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0469; 44CE0470; 44CE0471; 44CE0472; 44CE0473; 44CE0474; 44CE0475	016-5028; 016-5029; 016-5030	Nine Impact Area Forestry Blocks
CRM-0702-01	2007 Jan	Archaeological Survey, Proposed Forestry Activities, Training Areas 21, 23, 24, and 30, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0476; 44CE0477		Forestry Block Surveys
CRM-0701-01	2007 Jan	Archaeological Survey, Proposed Tree Removal, Directorate of Plans, Training, Mobilization, and Security, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			DPTMS tree removal
CRM-0704-01	2007 Mar	Cultural Resource Survey, Proposed Convoy Live Fire Course, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			CLFC
CRM-0703-02	2007 Apr	Archaeological Survey of Forward Operating Bases and Explosive Ordnance Demolition Areas at Fort A.P. Hill, Caroline County, Virginia	Louis Berger Group, Inc.	44CE0082; 44CE0110; 44CE0306; 44CE0325; 44CE0386; 44CE0391; 44CE0393; 44CE0400; 44CE0402; 44CE0478; 44CE0479; 44CE0480; 44CE0481; 44CE0482; 44CE0483; 44CE0484; 44CE0485; 44CE0486; 44CE0487; 44CE0488; 44CE0489; 44CE0490; 44CE0491; 44CE0492; 44CE0493; 44CE0494; 44CE0495; 44CE0496; 44CE0497; 44CE0498; 44CE0499; 44CE0500		BRAC/CASCOM FOBs and EOD
CRM-0706-02	2007 Apr	Archaeological Assessment of 1,033 Acres and Phase I Archaeological Survey of 27 Acres (High Sensitivity) in the EOD Range, Fort A.P. Hill, Caroline County, Virginia	Versar, Inc.	44CE0503; 44CE0504; 44CE0505; 44CE0506; 44CE0507; 44CE0508; 44CE0509; 44CE0510; 44CE0511; 44CE0512; 44CE0513; 44CE0514; 44CE0515; 44CE0516; 44CE0517; 44CE0518		BRAC/CASCOM EOD
CRM-0705-02	2007 Apr	Phase I Cultural Resources Survey for Proposed Cabins at Travis Lake, Fort A.P. Hill, Virginia	Paciulli, Simmons and Associates, Ltd.			Travis Lake Cabins
CRM-0707-01	2007 May	Additional Cultural Resource Investigations, Archaeological Sites 44CE0503, 44CE0506, 44CE0509, 44CE0511, 44CE0512, 44CE0513, 44CE0514, 44CE0515, and 44CE0517, Proposed Explosive Ordnance Disposal Range, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0503; 44CE0506; 44CE0509; 44CE0511; 44CE0512; 44CE0513; 44CE0514; 44CE0515; 44CE0517		BRAC/CASCOM EOD
CRM-0708-01	2007 Jul	Cultural Resource Survey, Proposed Heth Fire House, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program		016-0349-0011; 016-5031	Heth Fire House
CRM-0709-01	2007 Jul	Semi-Annual Technical Report: 28 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0065; 44CE0115; 44CE0496; 44CE0505; 44CE0509; 44CE0513		Forestry block surveys
CRM-0710-01	2007 Sep	Archaeological Survey, Proposed Temporary Breacher Facility, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			Temporary Breacher Facility
CRM-0711-02	2007 Oct	Cultural Resource Survey, Water Control Structure Repair at Smoots Pond, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program		016-0349-0058	Smoots Pond WCS
CRM-0801-02	2008 Jan	Semi-Annual Technical Report: 27 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0294; 44CE0295; 44CE0524; 44CE0525; 44CE0526; 44CE0527; 44CE0528	016-0349-0059	Forestry Block Surveys
CRM-0802-01	2008 Feb	Cultural Resource Survey, North Wilcox Camp, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			Wilcox Camp

CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-0803-02	2008 Mar	Integrated Cultural Resources Management Plan, Fort A P. Hill, Caroline County, Virginia.	Natural Alternatives LLC	44CE0040; 44CE0041; 44CE0042; 44CE0043; 44CE0044; 44CE0045; 44CE0046; 44CE0047; 44CE0048; 44CE0049; 44CE0050; 44CE0051; 44CE0052; 44CE0053; 44CE0054; 44CE0055; 44CE0056; 44CE0057; 44CE0058; 44CE0059; 44CE0060; 44CE0061; 44CE0062; 44CE0063; 44CE0064; 44CE0065; 44CE0066; 44CE0067; 44CE0068; 44CE0069; 44CE0070; 44CE0071; 44CE0072; 44CE0073; 44CE0074; 44CE0075; 44CE0076; 44CE0077; 44CE0078; 44CE0079; 44CE0080; 44CE0081; 44CE0082; 44CE0083; 44CE0084; 44CE0085; 44CE0086; 44CE0087; 44CE0110; 44CE0115; 44CE0116; 44CE0117; 44CE0118; 44CE0119; 44CE0120; 44CE0121; 44CE0122; 44CE0123; 44CE0124; 44CE0125; 44CE0126; 44CE0127; 44CE0128; 44CE0129; 44CE0130; 44CE0131; 44CE0132; 44CE0138; 44CE0275; 44CE0276; 44CE0277; 44CE0278; 44CE0279; 44CE0280; 44CE0281; 44CE0282; 44CE0289; 44CE0290; 44CE0291; 44CE0292; 44CE0293; 44CE0294; 44CE0295; 44CE0296; 44CE0297; 44CE0298; 44CE0299; 44CE0300; 44CE0301; 44CE0302; 44CE0303; 44CE0304; 44CE0305; 44CE0306; 44CE0307; 44CE0323; 44CE0324; 44CE0325; 44CE0326; 44CE0327; 44CE0328; 44CE0329; 44CE0330; 44CE0335; 44CE0336; 44CE0337; 44CE0338; 44CE0339; 44CE0340; 44CE0341; 44CE0342; 44CE0343; 44CE0344; 44CE0345; 44CE0346; 44CE0347; 44CE0348; 44CE0349; 44CE0350; 44CE0351; 44CE0352; 44CE0353; 44CE0354; 44CE0355; 44CE0356; 44CE0357; 44CE0358; 44CE0359;	016-0029; 016-0052; 016-0069; 016-0075; 016-0140; 016-0145; 016-0349-0001; 016-0349-0002; 016-0349-0003; 016-0349-0004; 016-0349-0005; 016-0349-0006; 016-0349-0007; 016-0349-0008; 016-0349-0009; 016-0349-0010; 016-0349-0011; 016-0349-0012; 016-0349-0013; 016-0349-0014; 016-0349-0015; 016-0349-0016; 016-0349-0017; 016-0349-0018; 016-0349-0019; 016-0349-0020; 016-0349-0021; 016-0349-0022; 016-0349-0023; 016-0349-0024; 016-0349-0025; 016-0349-0026; 016-0349-0027; 016-0349-0028; 016-0349-0029; 016-0349-0030; 016-0349-0031; 016-0349-0032; 016-0349-0033; 016-0349-0034; 016-0349-0035; 016-0349-0036; 016-0349-0037; 016-0349-0038; 016-0349-0039; 016-0349-0040; 016-0349-0041; 016-0349-0042; 016-0349-0043; 016-0349-0044; 016-0349-0045; 016-0349-0046; 016-0349-0047; 016-0349-0048; 016-0349-0049; 016-0349-0050; 016-0349-0051; 016-0349-0052; 016-0349-0053; 016-0349-0054; 016-0349-0055; 016-0349-0056; 016-0349-0057; 016-5009; 016-5031	ICRMP 2008
CRM-0804-02	2008 Apr	Phase I Cultural Resources Survey for the U.S. Navy Special Operations Command Permanent Breacher Facility, Fort A.P. Hill, Caroline County, Virginia	Paciulli, Simmons and Associates, Ltd.	44CE0080		Permanent Breacher
CRM-0805-02	2008 Apr	Archaeological Evaluation of 24 Sites in Forward Operating Bases and Explosive Ordnance Demolition Areas at Fort A.P. Hill, Caroline County, Virginia	The Louis Berger Group, Inc.	44CE0325; 44CE0386; 44CE0391; 44CE0393; 44CE0402; 44CE0478; 44CE0479; 44CE0482; 44CE0483; 44CE0484; 44CE0487; 44CE0488; 44CE0489; 44CE0490; 44CE0494; 44CE0495; 44CE0497; 44CE0499; 44CE0504; 44CE0507; 44CE0508; 44CE0510; 44CE0516; 44CE0518		BRAC/CASCOM
CRM-0806-01	2008 Apr	Archaeological Survey, Airfield Clearing, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			Airfield 1
CRM-0807-02	2008 Jul	Archaeological Survey of Approximately 1,028 Acres for Explosive Ordnance Demolition Training Areas at Fort A P. Hill, Caroline County, Virginia	The Louis Berger Group, Inc.	44CE0292; 44CE0293; 44CE0551; 44CE0555; 44CE0556; 44CE0557; 44CE0558; 44CE0559; 44CE0560; 44CE0561; 44CE0562		EOD
CRM-0808-01	2008 Jul	Archaeological Survey, Firing Point 1, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0564		Firing Point 1
CRM-0809-01	2008 Jul	Phase II Archaeological Evaluations, Sites 44CE0551 and 44CE0555, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0551; 44CE0555		Sites 44CE0551 & 44CE0555

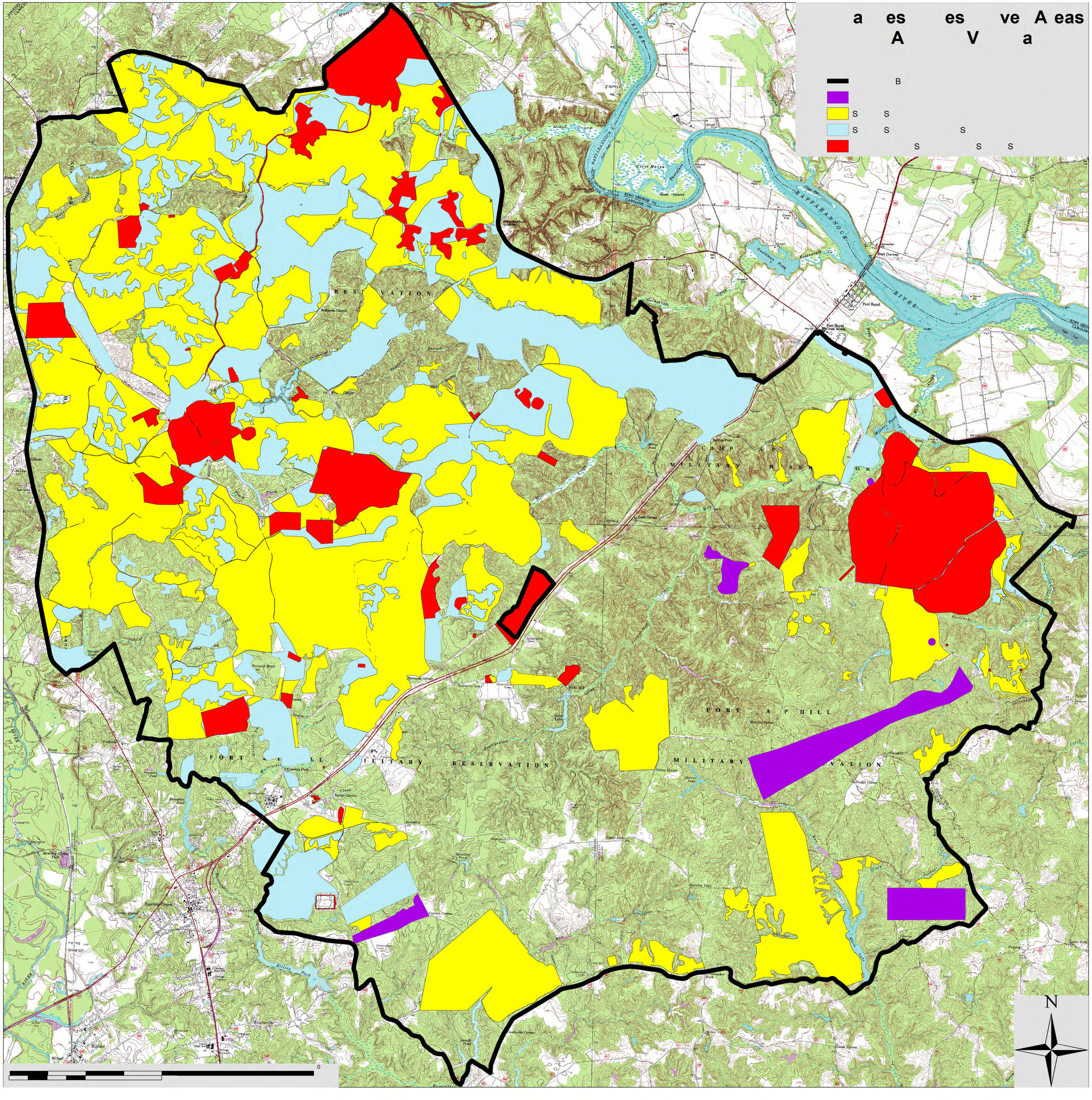
CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-0810-01	2008 Jul	Semi-Annual Technical Report: 72 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0042; 44CE0048; 44CE0051; 44CE0053; 44CE0062; 44CE0123; 44CE0299; 44CE0358; 44CE0365; 44CE0425; 44CE0426; 44CE0428; 44CE0431; 44CE0466; 44CE0468; 44CE0492; 44CE0495; 44CE0496; 44CE0497; 44CE0507; 44CE0509; 44CE0511; 44CE0512; 44CE0513; 44CE0518; 44CE0525; 44CE0529; 44CE0530; 44CE0531; 44CE0532; 44CE0533; 44CE0534; 44CE0535; 44CE0536; 44CE0537; 44CE0538; 44CE0539; 44CE0540; 44CE0541; 44CE0542; 44CE0543; 44CE0544; 44CE0545; 44CE0546; 44CE0547; 44CE0548; 44CE0549; 44CE0550	016-0349-0057; 016-0349-0060; 016-0349-0061; 016-0349-0062; 016-0349-0063; 016-0349-0064; 016-0349-0065	Forestry Block Surveys
CRM-0811-01	2008 Aug	Archaeological Survey, Maneuver Corridors D, E, and F, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0052; 44CE0525		Maneuver Corridors D,E,F
CRM-0812-01	2008 Oct	Archaeological Survey, UAV Airstrip and Fire Training Center, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0084; 44CE0573; 44CE0575; 44CE0576; 44CE0577		UAV Airstrip and Fire Training Center
CRM-0813-01	2008 Oct	Archaeological Survey, Bridge Replacements, Perrin Road and Gregg/Lent Road, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			Perrin Road and Gregg Road Bridges
CRM-0901-01	2009 Jan	Semi-Annual Technical Report: 33 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0301; 44CE0470; 44CE0473; 44CE0482; 44CE0483; 44CE0565; 44CE0566; 44CE0567; 44CE0568; 44CE0569; 44CE0570; 44CE0571; 44CE0572; 44CE0574; 44CE0578; 44CE0579	016-0349-0068; 016-0349-0069; 016-0349-0070	Forestry Block Surveys
CRM-0902-01	2009 Mar	Archaeological Survey, Training Facilities at Powers Road Corner, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0364		Powers Road Corner
CRM-0903-02	2009 Mar	Cultural Resources Phase I Reconnaissance Survey for the Proposed Asymmetrical Warfare Group (AWG) Range, Fort A P. Hill, Virginia	Paciulli, Simmons and Associates, Ltd.	44CE0564; 44CE0590; 44CE0591; 44CE0592; 44CE0593; 44CE0594; 44CE0595; 44CE0596; 44CE0597; 44CE0598	016-0349-0071; 016-0349-0072	AWG Range
CRM-0904-02	2009 Mar	Cultural Resources Phase I Reconnaissance Survey for the Proposed Infantry Platoon Battle Course (IPBC) Range, Fort A P. Hill, Virginia	Paciulli, Simmons and Associates, Ltd.	44CE0472; 44CE0581; 44CE0582; 44CE0583; 44CE0584; 44CE0585; 44CE0586; 44CE0587; 44CE0588; 44CE0589		IPBC
CRM-0905-01	2009 May	Archaeological Survey, Improvised Explosive Device Training Facilities, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			IED Defeat Lanes
CRM-0906-01	2009 May	Archaeological Survey, Ranges 8 & 9 Latrine Facilities, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			Ranges 8 & 9
CRM-0907-01	2009 Jul	Semi-Annual Technical Report: Seven Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0061; 44CE0132; 44CE0382; 44CE0383; 44CE0387; 44CE0388; 44CE0389; 44CE0390; 44CE0401; 44CE0402; 44CE0403; 44CE0404; 44CE0409; 44CE0479; 44CE0526; 44CE0615; 44CE0616; 44CE0617; 44CE0618; 44CE0619; 44CE0620; 44CE0621; 44CE0622; 44CE0623		Forestry Block Surveys
CRM-0908-02	2009 Aug	Archaeological Investigations on Civil War Resources at Fort A.P. Hill: A Synthesis	Paciulli, Simmons and Associates, Ltd.	44CE0031; 44CE0323; 44CE0325; 44CE0344; 44CE0346; 44CE0348; 44CE0349; 44CE0351; 44CE0352; 44CE0353; 44CE0355; 44CE0356; 44CE0357; 44CE0363; 44CE0368; 44CE0369; 44CE0370; 44CE0372; 44CE0374; 44CE0378; 44CE0379; 44CE0382; 44CE0385; 44CE0386; 44CE0387; 44CE0388; 44CE0389; 44CE0390; 44CE0391; 44CE0392; 44CE0396; 44CE0397; 44CE0398; 44CE0399; 44CE0400; 44CE0401; 44CE0402; 44CE0403; 44CE0405; 44CE0406; 44CE0407; 44CE0410; 44CE0425; 44CE0426; 44CE0427; 44CE0428; 44CE0489; 44CE0490; 44CE0505; 44CE0506; 44CE0507; 44CE0509; 44CE0511; 44CE0512; 44CE0513; 44CE0515; 44CE0517; 44CE0565	016-0349-0073	Civil War Sites (BRAC)

CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-0909-02	2009 Aug	Additional Investigations of Site 44CE0505, A Civil War Entrenchment in Training Area 25A, Fort A.P. Hill, Caroline County, Virginia	Paciulli, Simmons and Associates, Ltd.	44CE0505		Site 44CE0505 (BRAC)
CRM-0910-03	2009 Dec	Additional Investigations of Sites 44CE478, 44CE482, 44CE483 and 44CE488, Fort A P. Hill, Caroline County, Virginia	Paciulli, Simmons and Associates, Ltd.	44CE0478; 44CE0482; 44CE0483; 44CE0488		Sites 44CE478, 44CE482, 44CE483 and 44CE488 (BRAC)
CRM-1001-01	2010 Jan	Semi-Annual Technical Report: 17 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program	44CE0052; 44CE0058; 44CE0306; 44CE0347; 44CE0348; 44CE0350; 44CE0351; 44CE0352; 44CE0353; 44CE0354; 44CE0355; 44CE0387; 44CE0388; 44CE0429; 44CE0430; 44CE0484; 44CE0485; 44CE0486; 44CE0488; 44CE0500; 44CE0543; 44CE0656; 44CE0657; 44CE0658; 44CE0659		Forestry Block Surveys
CRM-1002-01	2010 Mar	Archaeological Survey, Wilcox Scrap Yard, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			Wilcox Scrap Yard
CRM-1003-01	2010 Mar	Additional Cultural Resource Survey, Explosive Ordnance Demolition Area, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resources Program			EOD
CRM-1004-01	2010 May	Archaeological Survey and Evaluation of Twenty-Six Abandoned Cemetery Locations, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0083; 44CE0475; 44CE0562; 44CE0590; 44CE0633; 44CE0634; 44CE0635; 44CE0636; 44CE0637; 44CE0638; 44CE0639; 44CE0641; 44CE0642; 44CE0643; 44CE0644; 44CE0645; 44CE0646; 44CE0647; 44CE0648; 44CE0649; 44CE0650; 44CE0651; 44CE0652; 44CE0653; 44CE0654; 44CE0655	016-0349-0072; 016-0349-0074; 016-0349-0075; 016-0349-0076; 016-0349-0077; 016-0349-0078; 016-0349-0079; 016-0349-0080; 016-0349-0081; 016-0349-0082; 016-0349-0083; 016-0349-0084; 016-0349-0085; 016-0349-0086; 016-0349-0087; 016-0349-0088; 016-0349-0089; 016-0349-0090; 016-0349-0091; 016-0349-0092; 016-0349-0093; 016-0349-0094; 016-0349-0095; 016-0349-0096; 016-0349-0097; 016-0349-0098	Cemetery Survey
CRM-1005-01	2010 May	Phase I Cultural Resources Survey for Construction and Operation of a US Army Reserve Center, TA 23C, Fort A P. Hill, Virginia	Paciulli, Simmons and Associates, Ltd.	44CE0672		Army Reserve Center
CRM-1006-01	2010 Jul	Semi-Annual Technical Report: 10 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0323; 44CE0324; 44CE0327; 44CE0328; 44CE0329; 44CE0339; 44CE0528; 44CE0540; 44CE0575; 44CE0577; 44CE0673; 44CE0674		Forestry Block Surveys
CRM-1007-01	2010 Jul	Archaeological Survey, Burma Road Bridge Replacement, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program			Burma Road Bridge
CRM-1008-02	2010 Oct	Additional Cultural Resource Investigations, Archaeological Sites 44CE0591, 44CE0596, and 44CE0597, Proposed 1200-Meter Range, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0591; 44CE0596; 44CE0597		AWG 1200-meter Range
CRM-1101-01	2011 Jan	Semi-Annual Technical Report: 10 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0356; 44CE0357; 44CE0358; 44CE0361; 44CE0362; 44CE0363; 44CE0365; 44CE0525; 44CE0581; 44CE0582; 44CE0591; 44CE0595; 44CE0676		Forestry Block Surveys
CRM-1102-01	2011 Mar	Archaeological Survey, American Water Administrative Building, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program			AW Building
CRM-1103-02	2011 Jun	Additional Cultural Resource Investigations for the Proposed Infantry Platoon Battle Course (IPBC) Range, Fort A P. Hill, Virginia	Paciulli, Simmons and Associates, Ltd.	44CE0472; 44CE0690		IPBC
CRM-1104-02	2011 Jun	Archaeological Survey of Pender Camp Wastewater Force Main at Fort A P. Hill, Caroline County, Virginia	The Louis Berger Group, Inc.	44CE0689		Pender Force Main
CRM-1105-01	2011 Jun	Phase II Archaeological Evaluation, Site 44CE0431, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0431		Site 44CE0431
CRM-1106-01	2011 Jun	Phase II Archaeologial Evaluation, Site 44CE0062, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0062		Site 44CE0062

CRM Report Number	Date	Report Title	Investigator	Archaeological Sites	Architectural Resources	Project Name
CRM-1107-01	2011 Jul	Semi-Annual Technical Report: 22 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0043; 44CE0044; 44CE0052; 44CE0059; 44CE0065; 44CE0069; 44CE0115; 44CE0299; 44CE0367; 44CE0368; 44CE0369; 44CE0370; 44CE0371; 44CE0372; 44CE0425; 44CE0427; 44CE0429; 44CE0430; 44CE0478; 44CE0521; 44CE0553; 44CE0566; 44CE0567; 44CE0623; 44CE0656; 44CE0657; 44CE0658; 44CE0659; 44CE0677; 44CE0678; 44CE0679; 44CE0680; 44CE0681; 44CE0682; 44CE0683; 44CE0684; 44CE0685; 44CE0686; 44CE0687; 44CE0688; 44CE0691	016-0349-0068; 016-0349-0069	Forestry Block Surveys
CRM-1108-01	2011 Aug	Phase II Archaeologial Evaluation, Site 44CE0469, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0469		Site 44CE0469
CRM-1110-01	2011 Dec	Additional Cultural Resource Survey, Infantry Platoon Battle Course Area, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0586; 44CE0589		IPBC
CRM-1201-01	2012 Jan	Semi-Annual Technical Report: 11 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0361; 44CE0362; 44CE0363; 44CE0374; 44CE0525; 44CE0695; 44CE0696; 44CE0697; 44CE0699; 44CE0709		Forestry Block Surveys
CRM-1202-01	2012 Mar	Archaeological Survey, Proposed Minehound Lanes, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program			Minehound Improvised Explosive Device Detection Area
CRM-1203-01	2012 Apr	Archaeological Survey, Ammunition Supply Point Area, Fort A P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program			ASP Survey
CRM-1204-02	2012 May	Archaeological Investigations at the Windsor Plantation (Site 44CE0110), Fort A P. Hill, Caroline County, Virginia	Louis Berger Group, Inc.	44CE0110		Windsor Plantation
CRM-1205-01	2012 Jul	Semi-Annual Technical Report: 24 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0048; 44CE0073; 44CE0075; 44CE0125; 44CE0126; 44CE0130; 44CE0307; 44CE0326; 44CE0350; 44CE0351; 44CE0352; 44CE0353; 44CE0354; 44CE0355; 44CE0400; 44CE0402; 44CE0403; 44CE0426; 44CE0479; 44CE0480; 44CE0487; 44CE0492; 44CE0526; 44CE0527; 44CE0529; 44CE0568; 44CE0569; 44CE0618; 44CE0619; 44CE0620; 44CE0621; 44CE0692; 44CE0693; 44CE0694; 44CE0698; 44CE0700; 44CE0701; 44CE0702; 44CE0703; 44CE0704; 44CE0705; 44CE0706; 44CE0707; 44CE0708; 44CE0710; 44CE0711; 44CE0712; 44CE0713; 44CE0714; 44CE0715; 44CE0716; 44CE0717; 44CE0718		Forestry Block Surveys
CRM-1206-01	2012 Aug	Archaeological Survey, Unmanned Aircraft System Landing Strip, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program			UAS Landing Strip
CRM-1301-01	2013 Jan	Semi-Annual Technical Report: 18 Archaeological Surveys at Forestry Activity Areas, Fort A.P. Hill, Caroline County, Virginia	Fort A.P. Hill Cultural Resource Program	44CE0673; 44CE0719; 44CE0720; 44CE0721; 44CE0722		Forestry Block Surveys

APPENDIX O

Surveyed Areas Map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Howards Corner
Carters Corner
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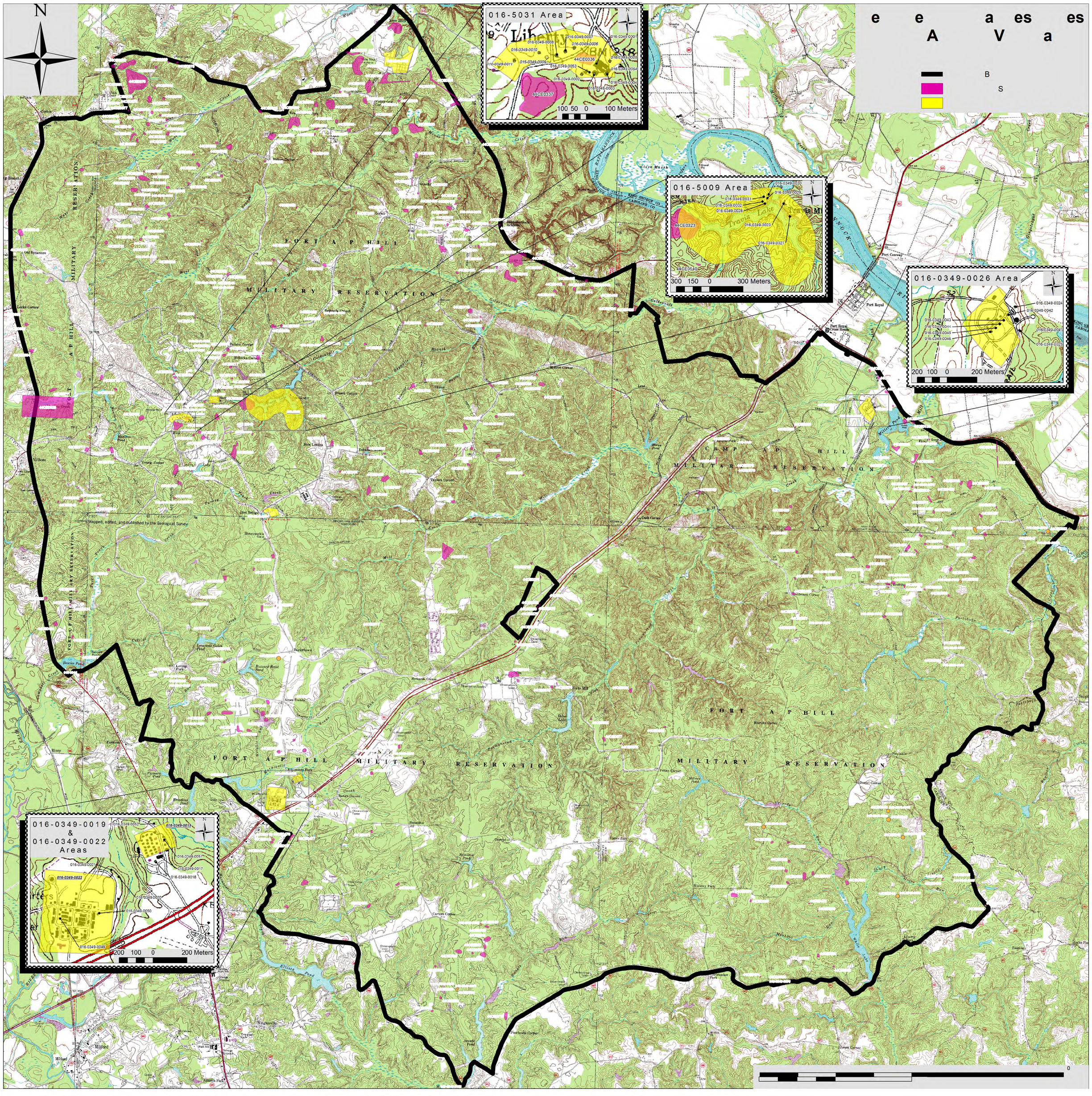
APPENDIX P

Recorded Cultural Resources Map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MILITARY RESERVATION
CAMP A P HILL
MILITARY RESERVATION
Port Royal
Mapped, edited, and published by the Geological Survey

APPENDIX Q

2003 Predictive Model

2003 Model for Potential Cultural Resources

Summary of Research Approach Employed by Cultural Resources, Inc.

Prehistoric Sites

In assessing the physical and environmental settings of prehistoric Native American sites, the principal factors affecting site location were determined to be topographical relief, soils, and proximity to water. An examination of previously recorded prehistoric sites, and an evaluation of the manner in which Native American settlement patterns were dictated by resource procurement strategies, indicated that high probability locations for this site type consistently include: areas of low relief, with slopes of less than 15 percent; areas characterized by well drained and moderately drained soils; and areas in which the nearest watercourse is less than 1,000 feet. The probability of identifying prehistoric resources diminishes accordingly in those areas with less favorable environmental characteristics. Areas of moderate probability for the presence of prehistoric resources include those locations with less than 15 percent slope, well- to moderately drained soils, but where distance to water is between 1,000 and 1,700 feet. Finally, it is unlikely that prehistoric archaeological sites will be identified in areas with greater than 15 percent slope and hydric soils, or in locations greater than 1,700 feet from the nearest water source.

Historic Sites

In developing a predictive model for historic resources at A. P. Hill, it was clear from the outset that no static model of "historic" site settlement patterns would accurately reflect the distribution of historic resources across the landscape of A. P. Hill. Over time, the relative importance of locational variables has shifted in response to economic, technological, and social developments. Accordingly, this site predictability model examined historic site settlement patterns during two broadly defined periods: the "colonial" era (ca. 1650-1800) during which tobacco was the mainstay of Caroline County's economy, and the nineteenth century (ca. 1800-1920), when grain crops replaced tobacco as the mainstay of the agricultural system. A third category focused on Civil War military sites, particularly winter encampments, which do not fit the traditional models for rural, agricultural settlement. Analyzing the available evidence from previously identified sites and map-projected resources, it was possible to define key environmental factors to consider in projecting patterns in historic settlement at A. P. Hill over time, and then use these patterns to create a testable model.

Given the primacy of the region's tobacco economy in the seventeenth and eighteenth centuries, it is not surprising that the two most critical site location factors identified for this period include site soils and slope, both essential considerations in tobacco cultivation. In fact, the analysis of the environmental characteristics of "colonial" sites at A. P. Hill fully substantiated the model developed by Craig Lukezic (1990) for Tidewater plantation sites. The vast majority of these resources were situated on sandy loams, particularly soils of the Kempsville-Emporia complex, with gentle slopes of 2-6 percent that provided the ideal conditions for tobacco culture. And, as

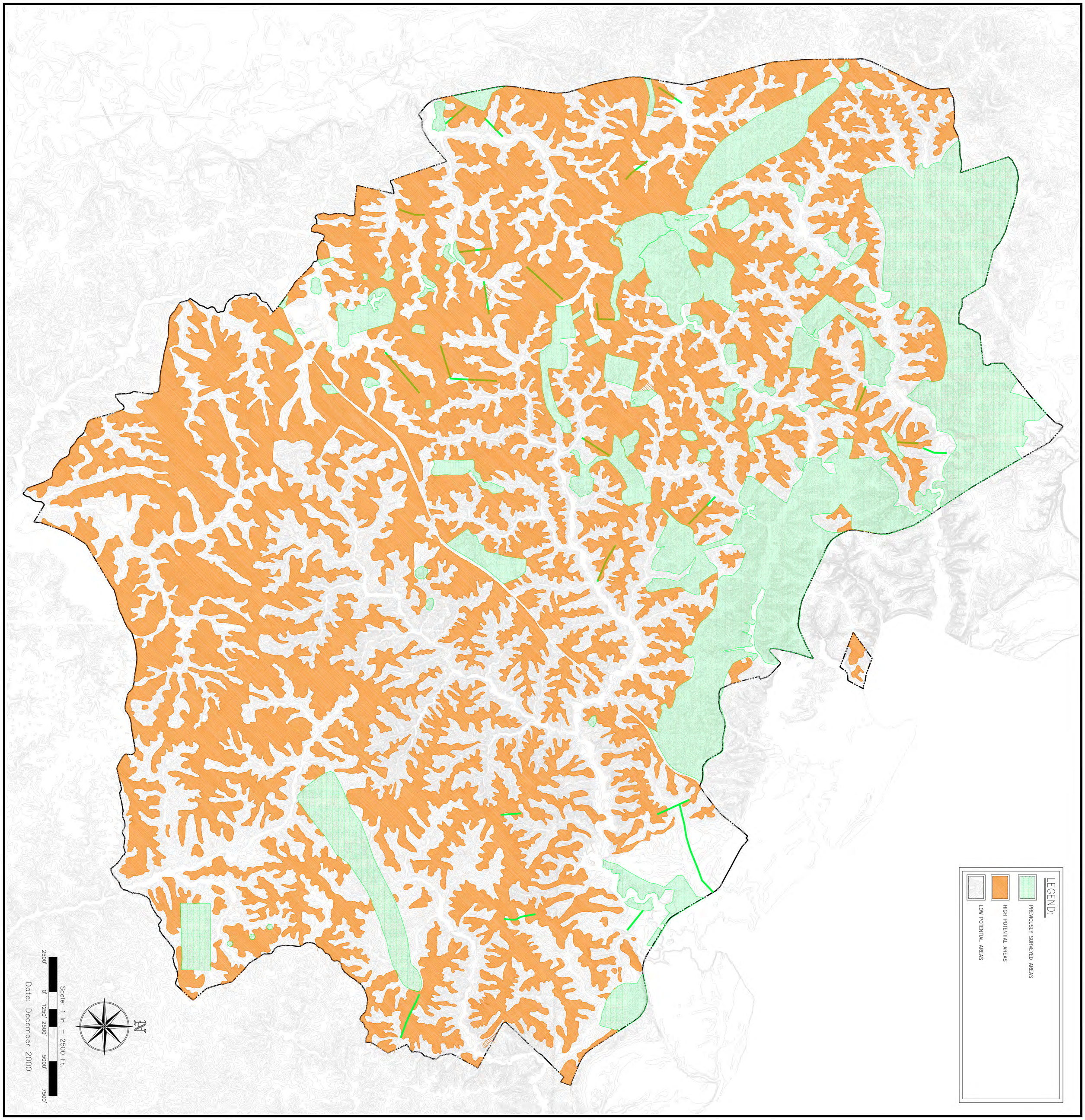
Lukezic noted, it appeared that distance to water, though important in the earliest settlement of Caroline County in the mid-seventeenth century, was not a significant factor in site location choice throughout the rest of the colonial period.

Caroline County remained solidly rural and agricultural into the early part of the twentieth century, and it is clear that site location continued to be dictated by environmental conditions that best favored farming. As with colonial sites, most nineteenth-century sites were situated on sandy loams, particularly soils of the Kempsville-Emporia complex. However, it was apparent that Caroline County farmers were making use of scientific advances in crop rotation and fertilizers, and expanding into areas characterized by a somewhat broader variety of soil types. In general, however, sites of this period were still situated on well-drained, sandy soils, in areas characterized by slopes in the range of 2-6 percent. And, as with the colonial period, distance to water proved to be relatively unimportant in the selection of settlement locations during this era.

Civil War Sites

The vicinity of Fort A. P. Hill became the focus of considerable military activity during the winter of 1862-63 when more than 36,000 men of Thomas J. "Stonewall" Jackson's Second Corps took up winter quarters in Caroline County, arraying themselves in a vast arc south of the Rappahannock from Round Oak Church east beyond Rappahannock Academy. Archaeologists have long realized that Civil War troops took advantage of south-facing slopes, constructing their dug-out hut shelters to make the most of good drainage and the warmth of the winter sun. An analysis of Civil War campsites throughout A. P. Hill revealed that the troops tended to favor the same well-drained, sandy soils as their civilian counterparts. It was not unusual, however, for the troops to pick sites characterized by slopes in the range of 10-50 percent. Finally, military campsites were, on average, situated closer to watercourses than were the farmsteads in the area, which could rely on well water.

By synthesizing the results of both inductive and deductive modeling techniques for both prehistoric and historic site locations at A. P. Hill, it was possible to use the physical and environmental characteristics defined for each resource type to generate an overall base map identifying areas of probability for archaeological sites (Appendix M). Though these areas are subject to further field-testing, they reflect a careful analysis of broad trends in settlement patterns over time.



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Appendix M, ARCHAEOLOGICAL SITE PREDICTABILITY MODEL
Fort A.P. Hill, Caroline County, Virginia

APPENDIX R

Historic Context Summary

HISTORIC CONTEXTS

In order to understand the potential cultural resources within the proposed project area, it is necessary to review the overall contexts of the prehistory and history of the general vicinity. The prehistoric and historic background context sections below were prepared by the Louis Berger Group, Inc., in association with a Phase I survey conducted at Fort A.P. Hill (Moore et al. 2007:13-27) and follow the general outline of time periods presented in the VDHR's cultural resource survey guidelines (VDHR 2011).

PREHISTORIC CONTEXT

The following synthesis of various sources regarding the known cultural history of the Middle Atlantic region and the eastern Piedmont and Coastal Plain of Virginia provides a framework within which information recovered from the investigation may be used to generate data relative to the prehistoric settlement/subsistence patterns of prehistoric groups. Human occupations in the region are generally divided into three cultural-temporal periods: Paleoindian, Archaic, and Woodland.

Paleoindian Period (13,000 to 10,000 BP)

Most of what is known about this earliest cultural development must be inferred from sparse surface recoveries of artifacts, particularly diagnostic fluted points (the term *points* refers to the morphology of these bifaces and is not used to assign these forms to a particular functional class). This information can be analyzed in conjunction with geochronological and paleoecological data to make generalized assumptions about the earliest post-Pleistocene inhabitants.

Traditionally, the Paleoindian period (13,000 to 10,000 years before present [BP]) has been viewed as a time when nomadic familial bands subsisted by hunting Pleistocene megafauna, e.g., mammoth and mastodon. The current consensus, however, is that Paleoindian subsistence patterns were characterized by a hunting/gathering economy that was based on the exploitation of either migratory game, such as caribou, in the Northeast, or large, modern mammals, such as elk, deer, and moose, in the Southeast, and that was supplemented by foraged or collected plant and animal taxa (Custer 1990). Evidence in support of this model of Paleoindian subsistence economy has been recovered at a series of Paleoindian sites in the Shenandoah River drainage (Gardner 1989). This work and a re-evaluation of earlier work both indicate that the settlement/subsistence patterns of Paleoindian groups were characterized by small groups or bands that occupied a series of transient camps along the smaller, upland streams rather than in the broad bottomlands. These camps were relatively small and were probably occupied seasonally for the purpose of exploiting locally abundant and accessible resources. Larger sites, possibly base camps, existed in locations at which high-quality lithic resources could also have been exploited. These quarry related base camps were often located near major streams or in large, open river valleys.

The artifact type that characterizes the Paleoindian period is the well-made fluted point, including the Clovis, Hardaway-Dalton, Quad, and Cumberland types. Fluted points were first discovered in the 1920s in the southwestern United States in direct association with the bones of extinct Pleistocene mammals, such as the mammoth and giant bison; they have not been recovered from similar contexts in the eastern United States. Raw-material analyses of fluted points and associated tools have indicated that Paleoindian knappers preferred high-quality, cryptocrystalline lithic materials, such as jasper, chert, and chalcedony. The Paleoindian toolkit also included scrapers (especially distal- and lateral-edge unifaces), spokeshaves (concave unifaces), hammerstones, abraders, gravers, wedges, multi-use flakes, and bifaces (Gardner 1989).

It is apparent from the artifacts recovered at the Flint Run Paleoindian Complex that two types of flake/core reduction technologies were employed during the Paleoindian period: hand-held core and bipolar core (Gardner 1989:19). The preference for high-quality lithic materials, especially at the Williamson Site and the Flint Run Complex, have led some to suggest that Paleoindian groups were "tethered nomads" (Turner 1989), or that they employed cyclical settlement systems that were focused on lithic outcrops (Custer 1990:23). In low-biomass environments where lithic resources were rare and where other resources may have been scattered relatively homogeneously across the landscape, occupations located at or near quarries may also have functioned as major base camps from which groups exploited other resources (Stevenson 1985). At Site 44HE251, located on a broad terrace above the Chickahominy River in nearby Henrico County, six fragments of Paleoindian hafted bifaces (four of which are similar to the Plainview type) and nine steep-edged endscrapers were recovered during Phase II investigations for a Virginia Power gas pipeline. The hafted bifaces are of nonlocal raw materials, and the endscrapers are of quartz, reflecting the expedient nature of the latter.

Archaic Period (10,000 to 3000 BP)

The early Holocene in Virginia continued on a developmental trajectory that had started at the end of the Pleistocene, involving an increase in temperatures, a continued rise in sea levels, and the full development of the postglacial, oak-hickory-pine forest. The boreal biota of the late Pleistocene was extirpated or was restricted to refugia in the highest elevations of the central Appalachians (Delcourt and Delcourt 1985). The geomorphology of the postglacial landscape became increasingly stable (Conners 1986).

Early Archaic (10,000 to 8000 BP)

Because of the climatic continuity from the Paleoindian period to the Early Archaic period, Gardner (1989) and Custer (1990) believe that the Early Archaic period should be viewed as a substage of the Paleoindian period. The environmental setting may have been similar; however, important changes occurred both in settlement strategies (expansion into upland areas) and in lithic technology during the Early Archaic that may have precipitated important changes in the social systems of Early Archaic groups.

Although the preference for nonlocal, high-quality lithic resources continued (Anderson 1991; Gardner 1989; Lowery and Custer 1990), the fluted points of the Paleoindian period were replaced with smaller, formed hafted bifaces that were side-notched or stemmed to facilitate hafting. The blades of these points often exhibit serrated edges. These technological changes reflect the development of new adaptive/hunting strategies that were oriented toward the exploitation of smaller game animals and plants (McMillan and Klippel 1981), and may also reflect shifts in patterns of residential mobility (Odell 1994). Diagnostic hafted bifaces of the Early Archaic in Virginia include Kirk Stemmed and Notched, Palmer Corner Notched, and several small, bifurcated-base types, e.g., LeCroy and MacCorkle. The bifurcated forms may have derived from the Kirk Corner Notched type and then developed into or were replaced by stemmed forms, e.g., Stanly and Morrow Mountain (Anderson 1991:94). This period also witnessed the introduction of a groundstone-tool technology, necessary for the exploitation of a temperate woodland environment. Other tools incorporated into the Early Archaic toolkit include drills, adzes, numerous scraper forms, gravers, and chipped-stone adzes (Gardner 1989; Lowery and Custer 1990). The addition of plant food-processing implements, such as mortars and pestles and nutting stones, to the Archaic toolkit indicates the increased importance of floral resources in Early Archaic economies. A trend toward expedient technologies, e.g., the use of flake tools, becomes more apparent in the Early Archaic lithic assemblages (Blanton and Sassaman 1989).

Settlement patterns in the eastern Piedmont expanded beyond the quarry-related base camp system that characterized the Paleoindian period as groups occupied areas along the major river drainages, with extractive sites located in upland areas and in specific, localized, environmental settings, e.g., freshwater wetlands, springs, or bogs (Custer 1990:27). The variety of site types and activities represented during the Early Archaic reflects an adaptation to an increased variety of resources that resulted from increases in the diversity of environmental settings and seasonal fluctuations in climate.

The range of site locations spans every microenvironment in the Coastal Plain, from saline estuary shores to the margins of major trunk streams and their tributary systems as well as pocosins and floodplain swamps, each with its own potential foods and other resources (Blanton 1995; Phelps 1983:24). It should be noted that the earliest Archaic sites in the Tidewater region have been flooded, like those of the preceding period; discovery of previous riverine base camps and coastal sites should not be expected except as resorted beach-line deposits and dredged secondary depositions (Phelps 1983:62). Although the uplands of the Coastal Plain were also exploited, the distance between streams is never great in this region, and upland areas were readily accessible from stream bank sites. Compared with the number of sites dating to the preceding Paleoindian period, the number of Early Archaic sites is significantly higher.

Bifurcated biface forms appeared at the end of the Early Archaic period, and the distribution of these forms is limited to the interior of the Southeast and Middle Atlantic regions, two factors that may represent changes in settlement/subsistence patterns brought about by the onset of the Hypsithermal interval and the resulting expansion of

pine forests in the Coastal Plain (Anderson 1991:96-97). Pine and other conifer forests have a low exploitable biomass for humans and their targeted prey species.

Middle Archaic (8000 to 5000 BP)

The settlement/subsistence pattern of Middle Archaic groups is characterized by the occurrence of larger base camps along major river systems and their tributary streams, and smaller, short-term camps along the higher-order streams and upland ridges. The establishment of base camps at the confluence of a major stream and one of its tributaries, or on broad areas of land that protruded out above a floodplain or marsh, continued to allow exploitation of a great variety and quantity of resources within a small area.

Innovations in lithic forms continued and are reflected in Middle Archaic material remains, such as the appearance of atlatl weights and grooved axes. The appearance of various types of atlatl weights indicates the landmark development of the spearthrower. Hafted bifaces of this period are large notched and stemmed forms, such as the Morrow Mountain, Stanly, and Big Sandy types. The common occurrence of groundstone mortars, pestles, manos, metates, nutting stones, grooved axes, and celts in Middle Archaic occupations suggests a pronounced involvement in plant harvesting (Ford 1977). This groundstone technology serves as a hallmark between Early Archaic and Middle Archaic stone-tool assemblages throughout the Middle Atlantic region (Stewart and Cavallo 1991).

The earliest phases of the Middle Archaic are represented by the various bifurcated biface forms that were introduced during the previous cultural period. Stemmed, hafted biface forms, dominated by the Morrow Mountain types (I and II), are particularly diagnostic of the Middle Archaic in the Coastal Plain. The Guilford type, a lanceolate hafted biface form, is a representative type that occurs in archaeological contexts that date to the latter part of the Middle Archaic period. The side-notched Halifax type is also found in Virginia during the latter portion of the Middle Archaic. Gardner (1989) notes a shift toward quartz as a preferred raw material occurring in the Middle Archaic.

Late Archaic (5000 to 3000 BP)

Lithic assemblages from the Late Archaic are characterized by noticeable trends in the regionalization of corner-notched and stemmed hafted biface forms. The “terminal” Late Archaic is marked by the introduction of an inorganic container technology and by regional varieties of broad-bladed, parallel-stemmed hafted bifaces that belong, in Virginia, to the Savannah River complex (Coe 1964:123-124). In this cultural period, steatite bowls may have been an integral part of the Late Archaic artifact assemblage in the Middle Atlantic and Northeastern regions and a precursor of ceramic vessels (Mouer 1991:47); however, recent research indicates that many steatite bowls postdate the presence of ceramics in the region (Kenneth Sassaman, personal communication 1996). In other areas of the eastern United States, Late Archaic groups were involved in interregional trade that included such items as copper from the Great Lakes region,

marine shells from the Gulf Coast, and imported, exotic, lithic raw material (Winters 1969).

The subsistence economy of Late Archaic groups within the Middle Atlantic region shows evidence of a stronger orientation to riverine resources (Mouer 1991) and the cultivation of native plant taxa (Fritz and Smith 1988; Voigt and Pearsall 1989). This riverine orientation undoubtedly reflected an adaptation to local hydrologic changes that resulted in vast areas of mudflats, salt marshes, freshwater swamps, and other aquatic and semi-aquatic habitats. The spawning grounds of anadromous fish were expanded enormously, and the vast fish runs that historically characterized the area began. Despite this focus, however, the continued presence of interior sites appears to offer evidence of a subsistence economy that was based on the exploitation of a broad range of plant and animal species, i.e., subsistence strategies that were similar to those of the Middle Archaic.

The use of local lithic sources intensified, beginning with the Late Archaic period. Cobble sources from along rivers and their tributary streams were utilized. Easily obtainable quartz, quartzite, and basalt were preferred for hafted bifaces and larger tools; however, nonlocal materials, e.g., rhyolite for Savannah River point types and steatite for cooking vessels, were also used.

Woodland Period (3000 to 300 BP)

Early Woodland (3000 to 2550 BP)

Although ceramic technology developed as early as 4500 BP in portions of the southeastern United States (Egloff 1991; Sassaman 1993), the adoption of this technology by human groups in Virginia is the hallmark of Early Woodland period material culture. Mouer (1991:48) argues that Early Woodland ceramics and other material culture "developed directly from their Transitional [Terminal Late Archaic] antecedents in the [James River] valley." Throughout the eastern United States, the archaeological record indicates that this technology was incorporated into what was fundamentally a Late Archaic lifestyle. Although the cultivation of native plant taxa was practiced, the Early Woodland subsistence economy remained largely based on hunting, fishing, and the gathering of wild plant foods. Other characteristics of Early Woodland material culture include the replacement of broadspear biface forms with small, lanceolate, notched, and stemmed biface forms and an elaboration in groundstone tool types (McLearen 1991:113-114).

Greater sedentism, which began in the Middle and Late Archaic, continued to develop during the Early Woodland. For the lower James River valley, Gardner (1982) suggested that settlement patterns during the period included two principal site types: macroband base camps and foray camps. The former site type represents sites occupied by large sedentary groups. These sites lay along estuaries, placing their inhabitants in close proximity to shellfish beds, which formed a significant segment of the subsistence base, and other subsistence resources. Foray camps consisted of small, briefly occupied sites

that lay in the hinterland of the base camps and were visited to obtain specific resources. Gardner (1982) did not observe evidence for seasonal congregation and dispersal of social groups during this period.

Early Woodland subsistence strategies also may have continued a trend begun during the late Late Archaic. Stevens (1991) suggests that Early Woodland populations focused on the exploitation of a few specific but plentiful food resources that became available at predictable locations and times of the year. Such resources may have included anadromous fish, which can be easily harvested in large amounts during annual runs. As evidence, Stevens cites the locations of large sites in estuarine or riverine environments for greater reliance on the resources offered by these habitats, toolkits that reflect woodworking and plant processing, improved storage technology, larger sites, and possible long-term occupations of sites (Stevens 1991:208).

Mouer (1991) has defined three subperiods (Early Woodland I, II, and III) of the Early Woodland based on the results of archaeological fieldwork conducted in the James River drainage (McLearen and Mouer 1989; Mouer et al. 1986; Mouer et al. 1980; Mouer et al. 1985). The Early Woodland I period consists of the transition from the Late Archaic to the Early Woodland, which is marked by the presence or cooccurrence of slab-built, steatite-tempered Marcey Creek Plain ceramics, Savannah River bifaces, and soapstone bowls about 2900 BP (Mouer 1991:47, 51). Marcey Creek ceramics are common in the Fall Line zone and in the Piedmont, but are found sporadically in the Coastal Plain; Marcey Creek sherds have been recovered in Early Woodland contexts in Chesterfield and Henrico counties in Virginia (Mouer 1991:49).

The Early Woodland II period is represented by early attempts at experimentation with pottery, and the production of coiled pottery with cordmarked surface decoration, e.g., Seldon Island Cordmarked, and Elk Island 1 phase (Accokeek) ceramics (2850 to 2750 BP) (Mouer 1991:48, 58-60). The Elk Island complex (2850 to 2150 BP) appears to have occurred throughout the James and Potomac river drainages and included small Savannah River, Calvert, and Piscataway biface types; chipped-stone and groundstone celts and adzes; drills; gorgets; and cremation burials (Mouer 1991:57-58). These manifestations of Elk Island material culture exhibit similarities to those of Early Woodland groups to the west, e.g., Adena (Mouer 1991:58). Elk Island 2 phase artifacts (2750 to 2550 BP) include relatively small stemmed, lanceolate, and notched hafted biface forms as well as axes, celts, hoes/grubbing tools, anvils, mortars, and hammers (Mouer 1991:60-61). The Early Woodland III was a period of standardization in the production of ceramics, and is noted for two regional ceramic traditions, one in the Piedmont and the other in the outer Coastal Plain (Mouer 1991:48).

Middle Woodland I and II (2550 to 1250 BP)

Middle Woodland I and II occupations decrease in number along the smaller streams, but there is an increase in the number of what appear to be sedentary villages along major streams and estuaries. This change in settlement patterns may reflect an increase in the importance of cultigens in the diet, since the most fertile soils in the region are found in

the bottomlands of major streams; however, maize agriculture was not important until the Late Woodland period, and a mixed economy probably prevailed in which wild food collection and the cultivation of native plant resources complemented each other. Seasonal camps were also established as shellfish-collecting camps. These sites often appear large because of accumulated shell middens, but they were probably occupied at any given season by only a few extended families.

Many of the settlement/subsistence strategies that developed during the Late Archaic and Early Woodland periods persisted into the Middle Woodland. The distinguishing traits of the Middle Woodland consist principally of changes in material culture. Characteristic artifact types include a series of new hafted biface forms, such as Potts, Rossville, Fox Creek, and triangle points. In addition, new pottery types are found throughout the Coastal Plain (Stewart 1992:2, 5).

Elk Island 3 phase (2550 to 2150 BP) artifacts include Rossville, MacPherson, and Adena hafted bifaces as well as coarse cordmarked and coarse net-impressed ceramics that "also can be classified as Popes Creek" (Mouer 1991:62). Another Middle Woodland I manifestation (ca. 2450 to 1750 BP) is characterized by Popes Creek ceramics and Rossville biface types (McLearen 1992:41; Stewart 1992:2). These types include crushed rock temper and frequently exhibit net-impressed surface treatment (Stewart 1992:8). During the second half of the period, shell-tempered Mockley ceramics became prevalent in the region. Examples of this ware commonly display net or cord impressions, or no surface treatment. Vessels of this type most often possess rounded or semiconical bases. They typically have straight rims, which sometimes evidence incised decorations (Potter 1993:62, 66). In the inner Coastal Plain two other pottery types, Prince George and Varina, co-exist with Mockley. Both types are tempered with coarse sand and crushed rock. Prince George ceramics are cordmarked or fabric marked, and Varina ceramics are net marked (McLearen 1992:44).

Populations of the Middle Woodland in Virginia exploited wild food sources through gathering, hunting, and fishing. They may have possessed some cultigens, but unlike coeval groups to the west and east where domesticates and the cultivation of crops were an important part of prehistoric economies, these cultigens formed an insignificant part of the total subsistence base (Stewart 1992:13).

Middle Woodland settlement patterns appear similar to those of the Early Woodland and continue the trend toward greater sedentism (Blanton 1992:68). Seasonal and year-round occupations characterize Middle Woodland base camps or hamlets. These sites often occur in physiographic settings that maximize access to a variety of plant and animal taxa, e.g., areas along rivers at the interface between salt water and fresh water (Stewart 1992:14). Smaller logistical or procurement/processing sites were occupied during forays from the larger camps to obtain specific resources. Potter's data from Site 44NB185 and from other sites in the Potomac River valley suggest that some of these smaller sites may reflect intensive occupation or frequent reuse over prolonged time spans (Potter 1993:76-77). Stewart (1992) notes a decrease in the size of group territories during the period, which may have resulted in the creation and maintenance of regional

networks of information and resource exchange. Stewart (1992:15-16) cites widespread artifact styles and ceramic designs as well as regional trade as evidence of this phenomenon. Management of regional trade and information exchange, particularly on a large scale, might also indicate positions of leadership within social groups.

Late Woodland (1250 to 300 BP)

The trend toward sedentism culminated during the Late Woodland period with the establishment of permanently occupied villages and hamlets. Populations in the region increased during the period, and increasingly complex social systems developed. Agricultural systems involving the cultivation of native domesticates and corn emerged as significant elements of the subsistence base (Turner 1992:97).

Aspects of material culture that define the period include distinctive pottery types. Early Late Woodland pottery types derive from late Middle Woodland types, and Late Woodland varieties mirror the widespread homogeneity that existed earlier. Initially, the dominant Late Woodland ceramic consisted of shell-tempered Townsend wares, which most frequently display fabric-impressed and incised surface treatments. By the later portion of the period, the spatial range of this pottery type had become constrained to the margins of Chesapeake Bay. Along upper portions of the James River and the Appomattox River, Townsend ware was replaced by Gaston ware tempered with sand and crushed quartz. Other forms of material culture include triangular projectile hafted bifaces, other chipped-stone
implements, and groundstone axes and pipes (Turner 1992:103-104).

An important difference between the Late Woodland and earlier periods involves a greater reliance on horticultural production. By the early Late Woodland varieties of maize and native domesticates had been introduced to the region, and local populations may have cultivated crops in fields prepared using a variant of slash-and-burn techniques (Potter 1993:101; Turner 1992). Regional data relating to these cultigens are meager, however, and the proportion of cultigens in the Late Woodland diet cannot be evaluated. Wild foods appear to have continued to contribute to the overall diet (Turner 1992).

Potter (1993:100-101) notes that Late Woodland settlement patterns varied over time. Potter's data from the Potomac River valley suggest that by the late Middle Woodland period populations occupied large, residential villages. During the early Late Woodland, however, the population scattered into dispersed small settlements, possibly as a result of environmental changes. Small resource-procurement camps continued to occur in association with these settlements. By the second half of the Late Woodland period, populations began to coalesce into relatively large palisaded settlements. The presence of palisades, in combination with less dispersed settlement strategies, could be indicative of increasing intergroup conflict (Potter 1993; Turner 1992:113). In addition, survey data from the James River valley suggest that utilization of interior areas and secondary drainages was greatly reduced from earlier periods. This shift probably reflects the introduction of cultivation, which was more suited to floodplain and terrace locations along major drainages (Turner 1992:114).

During the late Woodland the Coastal Plain was populated by Algonquian-speaking groups organized into a complex, chiefdom-level society. Information relative to the attributes of these societies comes primarily from ethnohistorical and archaeological data (Potter 1993; Turner 1992). The characteristics of the Powhatan chiefdom, encompassing most of the Chesapeake Bay shoreline, appear to have included social ranking, hierarchical settlement patterns, unequal access to resource surpluses, the acquisition of exotic goods (including European trade items after contact), and rank-differentiated burial regimes (Potter 1989; Rountree 1990; Turner 1992).

The Late Woodland period terminates with the Contact period, which refers to the interval during which Native American and European societies first encountered one another. In the Coastal Plain the period is characterized first by intermittent interaction between the two groups as a result of European exploration, trade, and fishing activities along the Atlantic coast. Intermittent direct contact between the two groups began after 1570 and consisted of a brief Spanish mission in Virginia and the short English occupation of the Roanoke colony in present-day North Carolina. In 1607 sustained intercultural contact commenced with the British settlement of Jamestown. This subdivision of the Contact period extended to 1622, the year in which the Powhatan Confederacy attacked the English settlements in the James River drainage. The Contact period ended in 1646 after a second series of conflicts between the British and the Native Americans produced the subjugation and virtual destruction of the Powhatan Confederacy in the James River valley (Hodges 1993:13-14).

The responses of Native American groups to the appearance of the colonizing British were relatively nonbelligerent; the two groups engaged in frequent trade with only occasional small-scale confrontations, but their relationship degenerated over the succeeding 20 years. Turner and Opperman (1993) suggest that a source of the friction between the two groups lay in their competition for the same resources. Potter (1989) argues that conflict also grew from economic rivalry as each side attempted to control their mutual trade. As competition between the British and Native Americans increased, relations between the two groups grew confrontational and culminated in the first mass attack by the Powhatan Confederacy on the British settlers in 1622.

The effects of this interaction on both the Native American populations and the British colonists in the region are not well understood. In general, it has been assumed that contact led to the disruption of traditional cultural systems (Hodges 1993; Potter 1989). In certain instances, moreover, interaction with Europeans also resulted in changes to the material culture of indigenous groups. Cultural influences flowed in both directions, however, as Europeans adopted elements of Native American material culture and agriculture (Mouer 1993).

HISTORIC CONTEXT

This historical overview is organized according to context periods that have been established by the Virginia Department of Historic Resources, including Settlement to Society (1607 to 1750), Colony to Nation (1750 to 1789), Early National Period (1789 to

1830), Antebellum Period (1830 to 1861), Civil War (1861 to 1865), Reconstruction and Growth (1865 to 1917), World War I to World War II (1917 to 1945), and The New Dominion (1945 to Present). The historical overview is designed to present contexts within which the significance of any historic archaeological sites in the project area may be evaluated.

Settlement to Society (1607 to 1750)

The earliest recorded exploration of the Chesapeake region of Virginia dates to June 1588, when Captain Vincent Gonzales and Juan Menendez-Marques sailed up the Chesapeake Bay along its western shoreline. While three accounts of the voyage remain in existence, the Spanish seafarers offered no description of the North American environment or its native inhabitants. The accounts do document several encounters with Native Americans, including at least two instances in which individual natives were captured, though the records indicate that neither prisoner lived very long in captivity (Lewis and Loomie 1953: 186-202; Cultural Resources, Inc. [CRI] 2001b:3-5).

When the British first settled Jamestown in the early seventeenth century, Caroline County was occupied by several Native American tribes, including the Pamunkeys, Mattaponys, Youngtamunds, Secobecs, Nantangtacunds, and Manohocs (Campbell 1954:3). Captain John Smith, the English explorer and cartographer, explored the Rappahannock region from 1607 to 1609, including the area that would become Caroline County (Campbell 1954:5). His first visit to the region was made under duress after he was captured by members of the Powhatan Chiefdom and escorted first to villages on the Mattaponi and Pamunkey Rivers and then to either the Rappahannock or Tappahannock River. After his release Smith continued to explore the region, creating a map of the area that showed not only major tributaries and landforms, but also the location of Native American population centers (Smith 1910:419). Despite the fact that Smith's map indicates no major Native American villages within the area now known as Fort A.P. Hill, several large villages appear to be located in very close proximity. Furthermore, seventeenth-century records, including those of the Virginia Land Office, indicate that the Rappahannock River basin was heavily populated by Native Americans (CRI 2001b:3-6).

European settlers began acquiring land along the Rappahannock River in the middle of the seventeenth century. A few decades later, merchants and financiers began to acquire large parcels of land along the northern boundary of the area now occupied by Fort A.P. Hill. According to Ayres and Beaudry (1979:41-44), "Most of the first inhabitants who moved into the interior regions were probably either small farmers or else tenants and indentured servants of large land owners who lived along the river." Intensive agriculture occurred on the most suitable soils, while inadequate lands would have been utilized as open range for livestock. Heavily forested tracts of land were used as woodlots for selective lumbering (Winter and Pezzoni 1994:17).

Modeled after the English system of land division, the Virginia Assembly created eight shires in 1624. As the population increased, shires were subdivided into counties

(Bradshaw 1955:1). When Caroline County was established in 1727, the boundaries encompassed lands previously divided among Essex, King and Queen, and King William counties (Campbell 1954:293-318, 363-364). The county, named for Queen Caroline, wife of King George II, included St. Mary's and Sittenborne Parishes, and part of a third parish named St. Margaret's (Caroline County Jamestown Festival Committee 1957:4-5).

Located between present day Ruther Glen and Carmel Church, Chesterfield was the focal point of trade at St. Margaret's Parish. Settlers from all sections of the upper end of the parish met here to take the ridge road to the Courthouse when St. Margaret's was still a part of King William. The Chesterfield settlement remained the chief commercial center of the parish long after Caroline became a county (Caroline County Jamestown Festival Committee 1957:4-5). Located between present day Kidd's Fork and Collins' pond, the Caroline Courthouse was the trade center of Drysdale Parish, a fourth parish in Caroline County. The Courthouse was constructed in 1731 after William Woodford, the sheriff, let a debtor escape from the basement of his manor, which the county used as a jail (Caroline County Jamestown Festival Committee 1957:4-5).

European-American settlement began in the area encompassed by Caroline County in the middle of the seventeenth century. As early as 1650, settlers began taking up land mainly along the Rappahannock near the area of Port Royal. One of the earliest large landholders was Thomas Hoomes, a major in the British Army. After receiving a land grant from the British Crown, he established a 7,000-acre estate that included a mansion built with bricks brought by ship across the Atlantic Ocean from England. Located on the outskirts of Bowling Green, the mansion still exists and is historically referred to as the "Old Mansion" (Caroline County Jamestown Festival Committee 1957:4-5).

By 1700 John Buckner had chartered a profitable tobacco warehouse in the area. This warehouse passed to John Roy and in time to his widow, Dorothy. Dorothy Roy was the only woman to have the franchise for a chartered tobacco warehouse in her name in Britain's American colonies. The warehouse became the focal point of trade, around which a once small settlement began to expand. When the settlement was chartered a town in 1744, the Crown named it Port Royal in her honor (Caroline County Jamestown Festival Committee 1957:4-5).

When Caroline's original magistrates attempted to set up the new county, they were faced with many difficulties. The population, which numbered 5,000, was scattered over nearly 350,000 acres. There were no towns, and only three small trading centers. Two of these were on the Rappahannock River in the vicinity of Roy's [Port Royal] and Conway's [Snow Creek] tobacco warehouses, and the third was in upper St. Margaret's Parish at Chesterfield Church [Ruther Glen] (CRI 2003:3-19). Despite a growing plantation economy centered on tobacco and an ever-increasing population, no north-to-south roads bound the county together. The cleared trails accessible to colonists led eastward to the courthouses of Essex, King and Queen, and King William. According to Haley (1985:10), "with neither common courthouse, market center, or church, few people in one of the three parishes which formed Caroline had even a speaking acquaintance with their neighbors in another . . ."

Despite the colonists' frequent use of paths, game trails and waterways, the volume of movement by pedestrians and crops called for a formal means of overland passage. In 1705, prior to the charter of Port Royal, a ferry system began crossing the Rappahannock River in an effort to connect residents of the Middle Peninsula with their neighbors in the Northern Neck. This ferry system provided the traffic to support taverns, general stores, and mills, transforming moderate paths in to well-traveled roads. While this aided in the establishment of Port Royal, Bowling Green, the county seat, would experience more permanent growth (CRI 2003:3-15).

An initial task of the new government was the construction of a local road network. At the time there were three types of colonial roads: narrow bridle paths for riders on horseback; wider wagon roads; and rolling roads (Busby 1993:10). Rolling roads were more developed roads designed for the transportation of tobacco overland to inspection stations located on the rivers (Ayers and Beaudry 1979:50). In 1730 a rolling road was created, connecting Roy's warehouse, later the site of the city of Port Royal, in the north with New Hope (present-day Bowling Green) in the south. Route 301 generally conforms to the alignment of the old rolling road (Busby 1993:10). Smaller feeder roads met with the rolling road, but their exact location has not been determined (Ayers and Beaudry 1979:54).

Three decades after the ferry began to carry people and goods across the Rappahannock River, four roads had been defined in Caroline County, including what would later be known as Route 17, the Three Notch Road, and Route 2, which passed through county seat of Bowling Green (CRI 2003:3-15). In addition, Head Lynch brought stagecoach service to Caroline County by obtaining court authority for a road to Aylett's in 1736. He later became the county's first postmaster, likely establishing the first post office at Needwood Tavern in lower Caroline (Haley 1985:11). Following the death of Head Lynch, the line was operated by Jourdan Woolfolk, and a second line was run by John Hoomes. The five county taverns— Needwood, New Hope, Tod's, Union, and White Chimney—served as stops along the stage coach lines that ran between Richmond and Fredericksburg (Haley 1985:11).

By 1732 the population of Caroline County was approximately 6,800 (Campbell 1954:4). Two decades later, the county's population had increased to approximately 13,000. On the eve of the Revolution, the county's population still continued to rise, encompassing nearly 15,000 (Ayres and Beaudry 1979:55-56). The common denominator for most of these residents was tobacco. Planters along the Rappahannock sold their crops through Roy's and Conway's warehouses, while residents along the Mattapony floated their crop downstream to Aylett's warehouse in the Tidewater. Plantation owners and farmers along the North Anna and Pamunkey rivers also utilized the waterway to transport crops, sending tobacco to Crutchfield's warehouse in lower Hanover.

Despite land disputes with local Native American groups, colonists continued to settle in territories north of the York River and along the banks of the Rappahannock River. According to Virginia Land Office records, thousands of acres in the Middle Peninsula were claimed almost overnight (CRI 2001b:3-8). Such obvious disregard to Native

American land rights precipitated several uprisings that resulted in hundreds of deaths. An additional effect of the strained relations between Europeans and Native Americans was the construction of forts in strategic locations, such that anxious and wary settlers could maintain surveillance on their indigenous neighbors.

At end of the seventeenth century and beginning of the eighteenth century, owners of large plantations began to accrue large tracts of land under the headright system (Campbell 1954:58-59). Utilizing this property, individuals like Robert Beverly, Ralph Wormeley, and John Catlett were able employ slave labor as a means to mass-produce tobacco. Large plantations of this style were not only integral to the establishment of commerce in the area, but were relatively autonomous because they also produced primary and secondary livestock goods, as well as field crops. These same elite plantation owners were involved in not only local and regional commerce and trade, but also the politics of Caroline County (Campbell 1954: 58-59; CRI 2001b:3-15; Hodges et al. 1985:31).

According to Billings et al. (1986:55, 122), the development and solidification of Caroline's government occurred in tandem with the stratification of colonial society as a whole. As an extension of their influence, members of the elite often held governmental positions within the county and its communities. This alignment between wealth and political persuasion left little opportunity for the advancement of the lower class (Billings et al.1986:55, 122).

Colony to Nation (1750 to 1789)

While the population of Caroline County expanded rapidly during previous decades, the county would see little growth between 1750 and 1789. The county's economy at this time closely resembled the overall colonial economy, featuring tobacco as the dominant crop (CRI 2001b:3-17). Despite the emphasis placed on tobacco as a cash crop, mixed agriculture was gaining in importance and popularity.

Although prosperity was enjoyed in large part because of the abundance of and demand for tobacco, cultivation this crop as a staple was not without problems. There were times when overproduction of tobacco threatened the economic stability of the region. Virginia plantations often overproduced tobacco and flooded the market, causing slumping prices in spite of a continuing high demand for the crop in Europe. In an attempt to control production of the crop, a law was passed as early as 1657 that forbade the planting of tobacco after July 10 of every year. Tobacco cultivation also often depleted the soil, limiting the term of production of the crop on any single tract of land. Farmers who cultivated tobacco at the same location for more than three years often noticed a serious reduction in the quantity and quality of the crop. Many farmers were therefore led to plant wheat or corn in the depleted areas or to abandon the tract altogether for new land. The easy availability of land discouraged farmers from practicing careful soil management, and as a result hundreds of acres in the county were laid to waste (Duplantis and Rupnik 2005:14).

The overall landscape of Caroline County was experiencing a new level of development as farms, mills, taverns, county stores, schools, and new churches began to appear on the landscape. Grist milling appears to have been an extremely important industry in Caroline County during the eighteenth century, with at least six mills being situated along Mill Creek. Mills operated by Caroline residents included William Tallaferro and John Miller's mills along the precursor of Route 17, as well as Peyton Stern's mill at Delos Pond, and Nicholas Ware's mill near Moss Neck (Ayres and Beaudry 1979:58-59).

At the time of the Revolution, Caroline County was the third most populous and affluent county in Virginia (Campbell 1954:xv). British blockades eventually stopped all seaborne commerce, and Port Royal became a ghost town (Haley 1985:12). During this period, Caroline was the first Virginia county to disassociate itself from the royal government subsequent to the signing of the Declaration of Independence. As a testament to their commitment to the new independent nation, the county's residents assembled a group of Minute Men (Campbell 1954:231-233; Caroline County Jamestown Festival Committee 1957:4-5; CRI 2001b:3-28). General William Woodford and Col. George Baylor were the ranking officers from Caroline County who served in the Revolution; many residents were wounded and killed in battle (Haley 1985:12).

Early National Period (1789 to 1830)

During the Early National Period, the newly formed nation began improving the existing system of roads. By the beginning of the nineteenth century, several major roadways traversed Caroline County, stimulating the new economy. According to Hodges et al. (1985:32), "By the first quarter of the nineteenth century a major thoroughfare extended throughout the length of the Middle Peninsula, a road now called Route 17. Small communities sprang up at inland crossroads. Rail travel, by the time of the Civil War, connected Bowling Green in Caroline County with Richmond, but did not extend into easterly portions of the Middle Peninsula." As the network of thoroughfares became increasingly complex, railways and turnpikes became an integral part of Virginia's travel infrastructure.

By the nineteenth century, the agricultural economy of the Virginia Coastal Plain diversified to include corn, wheat, and tobacco (Opperman and Thomas 1983:III-4-5). This diversification led to a more stable economy allowing for the construction of more permanent, substantial structures and a range of supporting commercial industries, taverns and mills.

The county's total population was 18,008 in 1820, including a slave population of 10,999. Following the trend set during the previous period, Caroline County saw limited population growth over the next forty years. The population leveled off at 18,000, remaining constant until 1860 (Ayres and Beaudry 1979:67).

Antebellum Period (1830 to 1861)

During this period the Virginia Board of Public Works made a decision to invest more in the navigable waterways throughout the state, as well as construct new canals and turnpikes. This investment enabled settlement to spread throughout the state, exploiting additional resources. As transportation continued to improve in Caroline County, farmers began to utilize fertilizer in an effort to replenish the soil and generate better farming conditions. Corn, wheat, oats, cotton, and tobacco were being produced with success, as animal husbandry and milling became a more integral facet of the county economy (CRI 2003:3-29).

Despite the decline of the tobacco crop, the regional economy, remarkably, did not stagnate for very long during the nineteenth century. The county began to flourish again as a result of the shifting focus of local trade and agricultural diversification. Area farmers turned to the production of wheat as a new regional staple crop, allowing agriculture to remain the region's most viable industry. The production of wheat led, in turn, to the development of mills to process the crop. Other industries that helped to revive and diversify the local economy included lumbering and fishing (Duplantis and Rupnik 2005:15).

The Richmond, Fredericksburg, and Potomac Railroad (RF&P) came through the country starting in 1839 when the railroad line from Richmond to Milford was completed (Haley 1985:19). In 1836 the RF&P was extended to Caroline County, making a substantial impact on the economy. The line was constructed deliberately near old stage roads, as access to transportation routes was essential for the railroad's construction (Griffen 1984). The introduction of the railroad contributed to the decline of Port Royal, shifting trade and shipping routes to the west, away from the port (Wingfield 1924:284).

Civil War (1861 to 1865)

Virginia seceded from the Union on April 17, 1861, with voters ratifying the secession on May 23. The same year, Richmond was named the new capitol of the Confederacy. A consequence of this shift was the devastation of eastern Virginia's landscape, as the focus of the war was on land separating Richmond from Washington, D.C., the standing capital of the Union. While no major battles were fought in Caroline County, the county was occupied by troops from the fall of 1862 until the end of the war, many of whom died of dysentery and exposure.

General T.J. "Stonewall" Jackson commanded one "wing" or corps of Lee's Army of Northern Virginia. In the fall of 1862, still recovering from the invasion of Maryland that had ended in the bloody battle of Antietam, Lee's army was holding positions on the south bank of the Rappahannock River. Some of Jackson's men were camped around Guinea Station in early December, and they were called from those camps to fight in the Battle of Fredericksburg on December 11. A few days after that battle, when it became clear that the Union army was not going to attack again, Jackson's entire corps was dispersed eastward into Caroline County. They generally referred to this position as

"Moss Neck." This area is located in present-day Fort A.P. Hill in area FOB 7/LSA (Pender Camp) (see Figure 1 [Moore et al. 2007]).

Every year of the war, troops went to winter quarters. Winter quarters were generally farther from the front lines, since enemy activity was considered less likely and response did not have to be so rapid. The troops could therefore disperse to take advantage of unspoiled areas of the country and seek out healthy, warm spots to spend the winter. During the first winter, there was some talk in both armies of having houses or barracks built by contractors, but that turned out to be only talk, and the troops had to provide their own accommodations (Official Records of the Union and Confederate Armies, Series 1, Vol. 5, 896-897).

As was their custom, the men built winter quarters for themselves out of whatever was handy. "The men are fixing up their shanties for the winter," wrote their commander, Brigadier General Elisha Paxton, on January 1 (Paxton 2005:82). According to John Worsham of the 21st Virginia, their quarters were quite diverse:

> Jackson's division went into camp at Moss Neck, where we made our winter quarters. These were huts made of any material that could be gotten, and in any way the architect of the party thought best. The greater number were logs. A few men had tents [Worsham 2005 17:1].

"Our fires are of green pine," wrote a soldier of the 33rd Virginia, "and we smoke as black as if we were burning a tar kiln" (Reidenbaugh 1987:56) The mud, everyone agreed, was terrible, even worse than in the Shenandoah Valley where they had spent the last winter, and they paved the streets with logs.

Accounts also survive from men in other Virginia regiments. William Greever of the 48th Virginia in Jones's Brigade wrote home that he had built "a very snug little house with a fireplace to it" in their camp eight miles from Guinea Station. The camp of the 10th Virginia, of Warren's Brigade, was "behind a hill within a mile of the river," a location they called Skinker's Neck (Murphy 1989:59).

It was the coldest and wettest winter in years. Heavy blizzards struck in late January, leaving snow two feet deep. Food was short. According to Lieutenant Samuels of the 10th Virginia:

> The country here is already exhausted of supplies and it would not surprise me if we have to move for want of forage. . . . Our fare is not so good as formerly, only a quarter of a pound of salt meat being allowed a day. Some days we are out of meat and have only bread [Murphy 1989:64].

The men depended greatly on packages from home for variety, and they also purchased apples and oysters from local civilians. Shoes and warm clothes were also in short supply. The men of the Louisiana Brigade were especially badly off in the regard, and

their officers eventually appealed to their congressional delegation for help in getting shoes.

Disease stalked the camps. In the diary of chaplain William Edward Wiatt, almost every entry for January and February begins either "visited the tent hospital" or "visited the sick in camp etc" (Wiatt 1994:20-35). John Samuel Apperson, hospital Steward in the Stonewall Brigade, wrote that in January two men were dying every day from "varioloid fever," that is, smallpox or chicken pox (Roper 2001:234).

In 1864 Confederate and Union forces fought along the North Anna River in southern Caroline County, with the majority of the county under the control of the federal army during this period (Ayers and Beaudry 1979:93). Following battles at the Wilderness and Spotsylvania Courthouse in early and mid-May 1864, Union and Confederate armies entrenched around Spotsylvania. Grant had the Army of the Potomac, comprising Hancock's II Corps, Warren's V Corps, Wright's VI Corps, and Burnside's IX Corps, begin marching southeast along the Ni River the night of May 20th. Upon discovering the enemy's movement the next morning, Lee sent his three corps, commanded by General's Anderson, Ewell, and Hill, directly south to cut off the Union advance towards Richmond. Ewell and Anderson's corps marched down the Telegraph Road, more or less following the current alignment of U.S. Route 1, towards the North Anna River, while Hill's Corps marched down roads paralleling Telegraph Road farther to the west. The Confederate forces crossed to the south side of the North Anna on May 22nd and encamped, but did not entrench, expecting the Union Army to cross the North Anna to its east. Lee set up headquarters at Hanover Junction, with Ewell and Anderson's corps protecting the Telegraph Road and Richmond, Fredericksburg & Potomac Railroad (RF&P) approaches after crossing the North Anna over Telegraph Road's Chesterfield Bridge. Hill's forces crossed the North Anna farther west and began marching southeast along the Virginia Central Railroad until reaching the area of Noel's Station and Anderson's Tavern (Duplantis et al. 2005:8-11).

After crossing the Mattaponi River late on May 21st, the Northern army turned southwest and marched towards the Telegraph Road. As the army neared the North Anna on May 23rd, the four corps extended east to west, with Hancock's II Corps straddling the Telegraph Road, Burnside to his left, and Warren taking up the right of the line. Wright followed Warren. Finding a single brigade manning a small fort at the approach to Chesterfield Bridge, Hancock's much larger force quickly overran the fort, captured the bridge intact, and established strong positions along the south side of the North Anna. Meanwhile, Warren began crossing the river uncontested farther west at a ford at Jericho Mill. Wilcox's Division of Hill's Corps attacked Warren's forces as they began their dinners, and nearly drove the Federals back to the river. But Hill was hesitant to send supporting troops while Union forces continued to ford the river and stabilize the northerner's ranks, and Wilcox was forced to retreat to Noel Station. Night fell with the Union forces firmly in hold of the south side of the North Anna at Jericho Mill, Warren bolstered by Wright, and at Chesterfield Bridge held by Hancock. Burnside attempted to cross the North Anna at Ox Ford but found Confederate forces too strong on the south side of the North Anna (Duplantis et al. 2005:8-11).

Lee recognized his army's precarious position, as well as Grant's vulnerability with his two flanks separated by the North Anna. Through the night of May 23rd, the Confederate forces moved back from their positions in front of the Union flanks and erected strongly entrenched defensive positions that would not permit the Union to reinforce one flank from the other without crossing the North Anna twice. The entrenchments' configuration, an inverted vee or pig's snout, also would allow Lee to mass his forces to attack one of the Union flanks while easily reinforcing the other flank if needed. The tip of the vee or snout stood on the high ground overlooking Ox Ford. The southwest wing, manned by Hill's Corps, extended approximately two miles to the Little River, a tributary of the South Anna River that provided a natural barrier to any advances. Anderson's Corps held the southeast wing extending to the modern intersection of Telegraph Road and Generation Drive, north of Hanover Junction. Ewell's Corps held the line as it extended eastward north of the rail crossing, crossed the RF&P, turned south paralleling the RF&P, and then extended southeast from Hanover Junction nearly parallel the Virginia Central and across modern State Route 30 in the vicinity of the current Kings Dominion amusement park (Duplantis et al. 2005:8-11).

On the morning of May 24th, the Union forces found the rebel armies gone from their positions in front of Chesterfield Bridge and Jericho Mill. Thinking that the Confederate forces had retreated to the south side of the South Anna River, Grant ordered Burnside to cross the North Anna and link the Union army's two flanks on the south side of the North Anna while Hancock was to move further south. Hancock's corps met determined resistance from the rebel's southeast wing and a skirmish line extending eastward from the Generation Drive entrenchments to the Doswell Farm and could not advance. Burnside sent forces west along the north side of the North Anna to ford at Quarles Mill. While waiting for all forces to form, Ledlie's Brigade advanced southeast along the south side of the river, charged Confederate forces manning the strongly entrenched southwest wing and snout, and were easily repulsed with heavy casualties. A thunderstorm broke late in the day to add to the Union troops' confusion. Grant finally realized the extent of the Confederate's entrenchments and ordered the Army of the Potomac to erect defensive earthworks. The two armies skirmished and bombarded one another for the next two days before the Army of the Potomac re-crossed to the north side of the North Anna and began another flanking movement to the southeast (Duplantis et al. 2005:8-11).

Other encounters occurred between the Union and Confederate Armies inside the boundaries of Caroline County. The memoirs related above and the battle of North Anna are, however, particularly illustrative of how each side utilized the local landscape during wartime. Sites chosen as Civil War camps often shared characteristics with sites chosen for peacetime domestic sites (Bentz and Kim 1993; Laird et al. 2000). The officers who laid out the camps sought the same kinds of sites as homebuilders: well-drained ground with ready access to roads and drinking water. Written accounts from the war note that local farmhouses were often used as hospitals and officers' quarters.

Reconstruction and Growth (1865 to 1917)

The face of Caroline County changed drastically after the Civil War, as did much of Virginia. The slave-based agricultural economy's workforce represented approximately half of the county's population. Emancipation opened up a world of possibility to the previously enslaved black population, allowing individuals to pursue economic and financial independence, as well as to own land, and organize churches and schools. Nevertheless, the antebellum white elite continued to wield power, forcing newly freed blacks and their poor white counterparts to work as sharecroppers (Stodghill et al. 1991:19-20).

Regardless of efforts to recover from the damages incurred during the Civil War, Virginia's economy continued to stagger until 1870. Real estate values dropped, inflation reached an all time high, and war-torn agricultural land required intense labor to enable farming to resume. As the county recovered slowly from the war, farms and communities were rebuilt, as were bridges and portions of the RF&P Railroad that were destroyed during the war. In time overland trade and shipping resumed. By the late nineteenth century diversified crops such as tobacco, corn, oats, wheat, and strawberries were the major agricultural exports for Caroline County (McFaden 1992:10). In 1899 corn was the dominant crop grown in Caroline, followed by wheat and tobacco (Stodghill et al. 1991:19-20). Eventually agriculture and the lumber industry would revive the county's economy.

The end of the nineteenth century brought an increase in the number of sawmills located in the area. Fifty sawmills were in operation all across Caroline County by 1893, often in association with gristmills. In addition, the availability of steam power allowed for some mobility in the mill industry (Stodghill et al. 1991:20). However, as a general rule, newer mills occupied the same sites as colonial mills, a testament to the requirement of waterpower. The manufacturing of excelsior began in Caroline County in 1896, marking the industries first appearance in the South. George P. Lyon, of Woodford, opened the first excelsior mill in the county, and many followed suit locating mills along the RF&P railways (Wingfield 1969:27).

Within the first two decades of the twentieth century, a telephone company was established to serve Caroline County, and the Bowling Green Power and Light Company was formed. To improve the county's education facilities, residents worked together to establish a community high school in 1908. During the fall of 1909, Sparta High School opened with 68 students enrolled (Haley 1985:54). According to Haley (1985:40), from 1909 to 1910 the school system of Caroline County continued to expand.

World War I to World War II (1917 to 1945) and *The New Dominion (1945 to Present)*

The twentieth century arrived with the introduction of gasoline-powered machinery. Tractors, trucks, and automobiles were quicker and more efficient than previous means for farming and transportation. The popularity of this new technology quickly spread, giving rise to new investments in road construction and improvement. Other innovations

included improved electricity and telephone service. Despite innovations in communication, transportation, and the production of goods, many farms in Caroline County remained small to modest in size.

During the 1930s some of the smaller communities that began in the late nineteenth century grew into more sizable settlements. These include Baylortown, Delos, and Mica. In 1940 on the eve of the creation of Fort A.P. Hill, Caroline County had a population of 25,904, a number that reflects steady population growth during the early twentieth century (Winter and Pezzoni 1994:20).

On June 1, 1941, 42,000 acres in northern Caroline County, representing most of the northern half of present Fort A.P. Hill, were acquired, resulting in the displacement of 2,319 residents. The Army constructed prefabricated housing in the town of Milford in an effort to shelter those individuals displaced by the new military reservation. Eight white churches, four black churches, and 10 public schools were acquired by the government (Winter and Pezzoni 1994:20).

However, "[f]rom January 1943 until August 1945, the average number of civilian employees was between 100 and 200. For very rural Caroline County, the A.P. Hill reservation was the single largest employer during the war years. Retail and service sectors of the local economy also benefited from the presence of soldiers stationed at the base. At times the base population surpassed 20,000, rivaling the 1940 county population of 25,904 residents" (Winter and Pezzoni 1994:20). As of the 2000 census, a total of 22,121 people lived in Caroline County, with the town of Bowling Green still acting as County Seat (Caroline County 2006).

In recent decades, development in Caroline County has been focused along the county's major highways. Economic growth in Caroline in the last five years has been rapid. In 2005 Caroline was recognized as the 10th Fastest Growing County in America. Also in 2005, Caroline County won the Virginia Community Economic Development Award (CEDA) for Business Recruitment. Among recent economic development successes in Caroline have been the recruitment of the State Fair of Virginia, Remuda Ranch, The Virginia Sports Complex, and the multinational electronics firm, M.C. Dean (Caroline County 2006). Despite an influx of commercial transportation and light industry, fishing, tourism, and agriculture continue to be integral to the local and regional economy (Hodges et al 1985:33).

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APPENDIX S

Tract-Specific Research

REVISED INTEGRATED CULTURAL RESOURCES MANAGEMENT PLAN: HISTORIC CONTEXT DEVELOPMENT

FORT A.P. HILL, VIRGINIA

Report Prepared for:
US Army Garrison
Environmental & Natural Resources Division
Directorate of Public Works
19952 North Range Road
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INTRODUCTION AND METHODOLOGY

As part of the effort to revise Fort A. P. Hill's Integrated Cultural Resource Management Plan (ICRMP), Task 1 of the project is Historic Context Development, which states:

> To develop a historic context for Fort A.P. Hill, the Contractor shall perform deed research focused on the land tracts that were acquired in the 1940s for the creation of the A.P. Hill Military Reservation. The Contractor shall identify those tracts that were occupied residentially and those tracts that were primarily agricultural in nature. Ad valorem tax records, deed records, census records, and other pertinent documents identified by the Contractor shall be used to identify the primary land-use patterns for the tracts. The deliverables shall include a report that contains the applicable chains of title for residential tracts and copies of appropriate ad valorem tax records, deed records, census records, and other referenced sources. Property histories will be written in narrative format and will include appropriate references to records used. Where possible, inferences shall be made about occupation status and improvements. The basic data will also be compiled into an Excel spreadsheet for ease of data use, and the results will be keyed to the acquisition tract map.

The objective of this project is to develop land histories for identifiable occupations located within the 76,000 acres of land acquired by the United States government for the establishment of Camp A. P. Hill in 1941. Although a small portion of the land acquired was situated in Essex County, research for this project focused on Caroline County. Because the emphasis of the project is to further illuminate the histories of the people who lived on Fort A. P. Hill (hereafter FAPH) lands prior to acquisition, the research methodology was developed to focus on those occupations rather than to research lands for which there is no evidence of occupation. To that end, the 1937 aerial photos were the starting point of the project. They were overlaid with the eight Tract Acquisition Maps and examined for structures that would indicate occupations or activities, mostly farmsteads and small hamlets. This approach is naturally biased toward early twentieth and late nineteenth century structures. However, research on this project has shown that occupation in Caroline County dating from the mid-nineteenth century or even earlier had, at times, endured until acquisition, sometimes in original structures or at least in the same location.

The 1937 aerial photos for the entire area of FAPH were examined, keyed to the Tract Acquisition Maps, to identify occupations. Using an Excel spreadsheet, each tract was designated as either occupied or unoccupied. In the next step, each separate occupation on the aerial photo was enclosed in a polygon and noted by tract, which in turn became a data layer in ArcView. Some tracts contained only single occupations, whereas other tracts contained multiple residential areas, suggesting tenants. In all cases, the locations of occupations dictated the area of emphasis for research. Land histories

focused on occupied property only, no matter how many habitations were noted on a tract.

From that beginning, a chain of title was run as far back in time as possible, utilizing Caroline County public and other record groups, including deeds, wills, marriage records, Chancery Count ended papers, land books, and any other useful primary or secondary sources available. Photographs, maps and oral history data gathered for FAPH's oral history project (Morton and Morton 2009) were also utilized.

However, such an effort is not without its difficulties. During the Civil War, many of Caroline County's early records were burned. In addition, some Caroline County deed records (Deed Books 41-43) are missing. At this stage of research, it was possible to research land histories back to the 1830s for some properties, but not further. Some property histories do not stretch back as far, and/or have breaks in the chains of title. In some cases, it was possible to pick up the land history on the other side of the break, leaving a gap in information. In some cases, it was not possible to trace the history beyond the break. As previous investigators have noted, "Caroline County's antebellum court records are fragmentary…relatively few local records exist that bridge the gap between 1728-1865" (McLearen *et al.* 2003:4-1). In researching some tracts, earlier occupations not visible on the 1937 aerial photos were discovered, which suggests the presence of previously unrecorded archaeological sites within those tracts. In all cases, even when chains of title are complete, land histories could always benefit from additional details garnered from supplemental research.

ACKNOWLEGEMENTS

This project is the beginning of a much larger effort to understand the history and context of settlement and occupation of Ft. A. P. Hill lands based on systematic, primary research. Such an effort would not be possible without assistance from many individuals and agencies. The author would like to thank Terry Banks (Chief, Environmental and Natural Resources Division, FAPH) and John Mullin (Archaeologist, FAPH) for the opportunity to do the work, their guidance and patience, and access to their accumulated information on the history of FAPH lands. The staff of the Central Rappahannock Heritage Center in Fredericksburg was enormously helpful in the effort to delve the depths of Caroline County's public records. In particular, Diane Ballman at CRHC was an enormous asset to this research, allowing access to the collections off-hours and spending copious amounts of time hunting down research leads on request. Jane Beck of Middlebury College in Vermont freely shared her own primary research on the Gouldin family in Caroline County, along with her brilliant book manuscript. Thanks to the staff of the Caroline County Clerk's office. Finally, the author would like to thank staff of Paciulli, Simmons and Associates for support in this project, particularly Dr. Allan Morton for his oversight of the contract and expertise in GIS applications for historic mapping and aerial photography.

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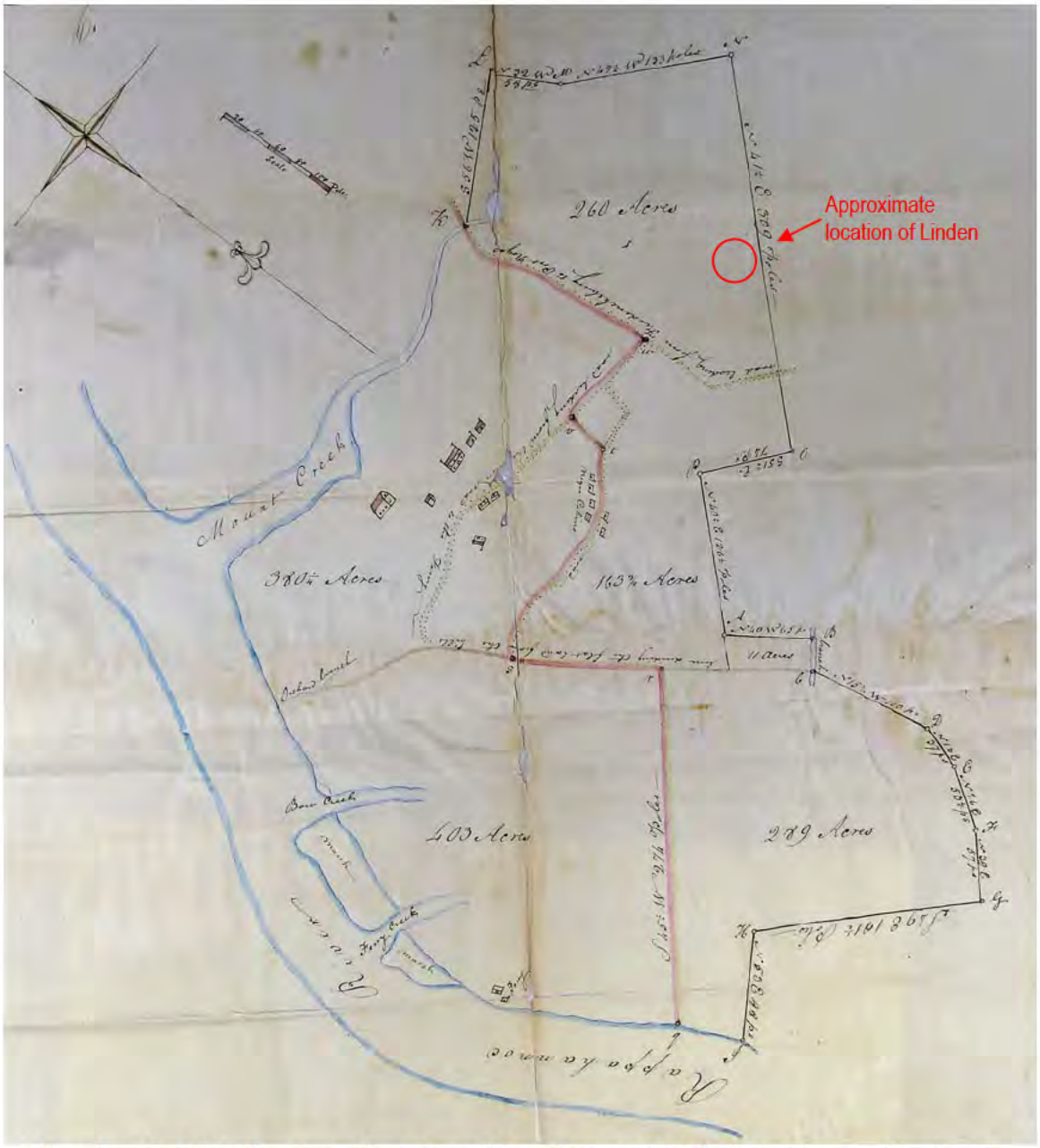
LAND HISTORIES

Tract 1 (Map Sheet 2, Quad J7)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the central portion of this tract in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 1, which encompassed 687 acres. One large farm complex, Linden, was noted centrally within the tract on the aerial photo. Documentary evidence also indicates two secondary tenant occupations and a cemetery within the tract as well.

Some conflicting evidence exists on the origins of Linden within modern-day Tract 1, as is the case with the early histories of many properties. The occupation on Tract 1 reportedly began *ca.* 1800 with construction of the house known as Linden [also spelled Lyndon] (Farmer 1937d). The earliest known documented owner of the property was Charles C. Taliaferro, who owned a 1,507 acre tract on the Rappahannock River, north of Mount Creek by 1832 (Garnett vs. Taliaferro 1839). The tract included a 260-acre parcel that falls within the boundaries of modern-day FAPH in Tract 1, which contained the location of Linden. The remainder of the land falls outside the boundaries of modern-day FAPH. It is unclear when Taliaferro obtained this property, or who he purchased it from. It is also unclear if Linden was already standing when he bought the property, or if he built the house himself, or even if the house had been built as early as reported. In 1832, Taliaferro died, and the following year the property was divided between his two nephews, Benjamin F. Taliaferro and Theodore Garnett (Garnett vs. Taliaferro 1839). Theodore Garnett was awarded all lands north of the red line on the plat below, which included the 260-acre parcel where Linden was located. The farm complex situated north of that line known as Hay Mount (also known as Hays Mount and the Mount), is depicted in detail with manor house, barn, outbuildings, and even “Negro Cabins.” However, Linden is not depicted on the plat at all, suggesting that perhaps it had not been built by 1832, despite the oral history stating that it had been built *ca.* 1800. The map evidence suggests that Hay Mount to the east of the Linden lands were the primary occupation on Charles C. Taliaferro’s land at that time.



Map 1. The 1832 plat map of portion of the Charles C. Taliaferro Estate, showing the 260 acre tract along with other lands allotted to Theodore Garnett, which includes the occupied portion of modern-day Tract 1 (Garnett vs. Taliaferro 1839).

After Theodore Garnett inherited the 260 acres where Linden is located, along with other lands in 1832, he sold it in 1834 to John W. Gouldin, who reportedly went by the name of "Jack" (Farmer 1937d, Beck 2012). The Gouldin name appears spelled in various ways in historic records including Gouldin, Goulden, Goulding and Golden. Garnett owned the land for such a short period of time, it is doubtful that he had any part in the construction of Linden. According to historian Beck (2012), although the deed for the transaction between Garnett and Gouldin was lost during the Civil War, the Caroline County land Tax Books indicate that Jack Gouldin purchased 720½ acres for $17,009,

which was the land's current value. This purchase included Hay Mount as well as the property where modern-day Tract 1 and Linden was located.

Jack Gouldin's purchase of this land was a beginning of his accumulation of property, in terms of land, houses, slaves and the latest agricultural equipment of its time. Jack Gouldin came from a family of yeoman farmers who lived in the area. Although he had managed his father's farm previously, Hay Mount and the adjoining properties were the first he owned himself (Beck 2012). Gouldin's purchase of the 260 acres where Linden was located again begs the question of the house's origins. Gouldin family oral history reported, "the first owner of this house was Mr. John [Jack] Gouldin…The house has always been in the Gouldin family" (Farmer 1937d). Although part of the family oral history is that the house was built "about 1800" (Farmer 1937d), if it was built by Jack Gouldin, a more accurate date might be about 1834. That timing is supported by another part of the Gouldin family oral history that states, "The original part of this house was of one and one-half story construction, and had dormer windows. This house was built for the manager of the farm" (Farmer 1937d). If Jack Gouldin bought 720½ acres in 1834 and was living at Hay Mount, it makes sense that he would have built a house for his manager, thus making *ca.* 1834 the most likely date for construction of Linden and the initial occupation of modern-day Tract 1. Unfortunately, the identity of Jack Gouldin's farm manager at that time remains unknown.

Gouldin family oral history about Linden also claims that after the house's initial construction, most likely in *ca*. 1834, "About five years later, the owner decided to move into it, so had a wing added to the south end of it" (Farmer 1937d). Although research by historian Beck (2012) puts Jack Gouldin at Hay Mount his whole life until his death, family history suggests that Jack Gouldin moved to Linden in about 1839. No matter which was the case, it would appear that Linden was occupied continuously by Gouldin family members or someone associated with Gouldin's larger farm enterprises, such as a manager or overseer, from the early 1830s onward.

By 1850, census records indicate that Jack Gouldin was a 63 year old farmer who owned $30,000 worth of real estate. He lived with his wife, Elizabeth (nee Broaddus), and two of his ten children were still at home, son James F. (a student, age 20), and daughter Bettie J. (age 16). Two of his grandchildren also lived in the house, John G. Gouldin and Josephine A. Broaddus, ages 15 and 8, respectively, both of whom attended school during the year. The household was rounded out by Gouldin's farm manager, 22-year-old George W. Bullock, and a 22-year-old mulatto, Bird Dundridge (U. S. Census 1850). In addition to Gouldin's immediate household, the 1850 census recorded 10 slaves in his possession, ranging in age from 3 months to 50 years, both male and female, some listed as black and some as mulatto (U. S. Census 1850, slave schedule). At this point in time, evidence indicates that Linden is an operational farm, and part of Gouldin's large landholdings with a residence and associated outbuildings.

In his lifetime, Jack Gouldin accumulated a large estate totaling 2,086 acres, "with 1100 acres of fields and pastures. These lands stretched out over flats of sandy clay loam from the Rappahannock to the low hills extending a few miles west of the

Rappahannock" (Beck 2012). Gouldin's lands consisted of numerous farms, including Hay Mount (his primary residence), Linden (where he appeared to live on and off), Maywood (Tract 33), Chestnut Grove (Tract 203), as well as others.

During the Civil War, the proximity of Linden (and the rest of Gouldin's property) to the Rappahannock River, which separated Confederate and Union troops, made the house and property subject to much activity during the conflict. Gouldin family history noted, "One of the southern generals made this house his headquarters and spent the winter of 1862 here. His soldiers camped on a field back of the house. (This field has since been known as 'The Camps'). All the trees were cut down by them and used as firewood. Many bayonets and canteens were found that were left by the soldiers" (Farmer 1937d).

After the battle of Fredericksburg in December 1862, Confederate forces retired to Caroline County where they made their winter camps at various locations. In February 1863, as that winter was slowly winding down, John Gouldin wrote his last will and testament and died shortly thereafter. A portion of Gouldin's will noted:

> I desire as a portion of the Army of the Confederate States have settled for Winter on Several parts of my land, that if the said Confederate Government Shall pay my Estate the damages done to it by the Said Army, that the Amount paid by the said Government on Each Separate lot as above described shall go to and be the property of the legatee of that lot (CRHC file 2004-040-246-028).

In late spring of 1863, as troops were rallying from their camps on to what would be the Chancellorsville Campaign, Colston's brigade, commanded by Colonel E. T. H. Warren had been encamped at Skinker's Neck in Caroline County. The brigade was "composed of the first and Third North Carolina Regiments, and the Tenth, Twenty-third, and Thirty-seventh Virginia Regiments, and aggregating 2,125 for duty" (United States War Dept. 1880-1901:Series 1, Volume 25, Part I:1031). With that many soldiers and officers camped over the winter at Skinker's Neck, it is possible that members of Colston's brigade were the ones encamped at Linden, as well as Gouldin's other properties.

Map 2. 1864 Gilmer map depicting Confederate entrenchments on Skinker's Neck, Jack Golden's land and the location of modern-day Tract 1. Hay Mount is designated with the alternate spelling of "Golden."

At Gouldin's death in 1863, he divided his large estate into three lots. Out of these lots, Jack Gouldin gave, "my son Thos. W. Gouldin the second choice of said lots." Lot No. 1 included the lands he bought from Theodore Garnett and B. F. Taliaferro, which had been the Charles C. Taliaferro lands previously. Within the designated Lot No. 1, Gouldin specified, "All the land I bought of the said Garnett & Taliaferro, which lies South & west of the Main Road & on which my old house, now used as an overseers house now stands" (CRHC file 2004-040-246-028). Thomas Goudlin chose Lot No. 1 out of his father's estate. This is the 260-acre tract out of the former Taliaferro lands that contains Linden within modern-day Tract 1. Gouldin's mention of Linden as an overseer's house again reinforces the idea that both Jack Gouldin and people in his employ (such as a manager or overseer) had lived at Linden.

In 1870, the "tract of land called 'Lynden' lying in Caroline County, [was] held & occupied by said Thos. W. Gouldin, and containing seven hundred & seventy five acres" (CRHC 2004-040-246-028). At that time, peripheral portions of both the Lynden and Hay Mount estates were sold off to pay "certain debts remaining due by the Estate of John Gouldin dec'd." along with money "due from the said Thomas W. Gouldin and James F. Gouldin" (CRHC 2004-040-246-028). The core portion of Linden, and the occupied parts of modern-day Tract 1 remained under the ownership of Thomas Gouldin. Dr. Thomas W. Gouldin was married to Louisa Redd, and together they had nine children, one of whom was daughter Molly Lou (also Mollie L.). In 1874, Molly Lou married her first cousin, Louis F. Gouldin, son of Silas J. and Susan Gouldin. Together, Louis and Molly Gouldin had at least three daughters, including Mary L. Gouldin, who was born in 1881 (U. S. Census 1900). At some point between 1900 and 1910, Mary L. Gouldin married W. E. Skinker (also known as William E. Skinker, William Skinker, Ernest Skinker and W. Ernest Skinker).

During this span of time, the Gouldin family was large and collectively held substantial acreage that encompassed a number of named farms. Based on evidence from other tracts, Dr. Thomas W. Gouldin did not continue to live at Linden. Instead, it appears that the property was passed on to his daughter, Molly Lou Gouldin, and then to her daughter, Mary L. Skinker (nee Gouldin), in turn. It appears that as each of these women married, they took over running the household with their husband as the head. Throughout the tenure of each generation, the property at Linden was operated as a large farm.

By 1910, Molly L. Gouldin still lived at Linden as a widow in her daughter Mary's household (U. S. Census 1910). By 1920, the household at Linden was headed by William E. and Mary L. Skinker and still included Mary's mother. A 22-year-old Harry L. Weeks was in residence, possibly as a manager. Two female servants also lived in the house (U. S. Census 1920). In 1922, Linden underwent renovation. "Originally this house was of the one and one-half story type with dormer windows but in 1922 these windows were taken off and the house changed into a two-story building" (Farmer 1937d).

In 1930, William and Mary Skinker still lived at Linden, but Mary's mother had died. The rest of the household consisted of two "negro" servants, Ellen Fortune (age 25) and Herbert Jones (age 20), and two "negro" children, Alphus Key (age 7) and Ellis Fortune (age 2) listed as "roomers" (U. S. Census 1930). Although the census data might seem straightforward on the relationships between these people, oral history indicates that the relationships were much more complex. Informant Lois Fortune Garnett reported that, "My dad's name was John Louis Fortune, and my mother was Mary Ellen Baylor, and I had two brothers, Alfred Kay and Ellis Fortune" (Garnett 2007). In speaking about her father, John Louis Fortune, she explained, "his mother was Jenny Jones (see Tract 190), his father was named Phillip Jones; I never knew his father because his father died when he was 15. But his mother lived with us off and on" (Garnett 2007). The Herbert Jones who also lived at Linden at this time was Ellen Fortune's brother-in-law (U. S. Census 1930).

Garnett continued to explain that her mother, Mary Ellen Baylor Fortune, "was raised by white folks" and that those people were "one of the Skinker brothers that raised my mother" (Garnett 2007). Garnett (2007) explained the arrangement by saying:

> …my grandmother had this baby and another family took my mother, and the lady that took her died when she was 8 years old. And you know, that kind of puzzled me until I was grown enough to understand why did he ask this white lady and her husband to raise her. But I guess at that time, most black people had a lot of children and this family didn't have any children, so I figured he kind of figured, I guess, well, they'll be able to feed her and take care of her, so they did.
>
> And we all were born there, and we all lived together. She used to ride us around and call us her grandchildren, we didn't—we just didn't know any different.

Based on this account, it appears that the Fortune family started out living as members of the Linden household and then set up a sharecropping arrangement on modern-day Tract 1. Garnett (2007) stated, "We didn't own the house that we lived in because my father was a sharecropper at that time… he was working on Skinker's farm in Moss Neck." John Louis Fortune's crops were, "Wheat, corn, and beans…No tobacco…We had soybeans." Garnett (2007) described her father's farm on Linden lands as, "a frame house with, let's see, five rooms, and a kitchen and a spring… We didn't have a silo, we had a barn, big barn."

Beyond the Fortune farmstead on modern-day Tract 1, Garnett recalled her general neighborhood. "Well, we lived in a little community. There were the Cole family [Tract 36], the Chambers family [Tract 52], the Wallace family, the Jackson family, and our family. And we all kids played together" (Garnett 2007).

Elsewhere on modern-day Tract 1 at some point between 1930 and 1935, another small occupation had been established on Linden lands. George and Ellen Lucas Bumbray (also spelled Bumbrey) lived on their own small farm with their large family which ultimately consisted of fifteen children and one grandchild (U. S. Census 1930 and 1940). They had purchased their small farm, but had most likely lived there previously as tenant farmers on Linden lands. Owing most likely to the hardships many faced during the Great Depression, George and Ellen Bumbray sold their farm back to the Skinkers in 1937 (CC DB 110:109). Despite the change in ownership of this very small portion of modern-day Tract 1, members of the Bumbrey family had vivid recollections of living on what they considered to be their father's farm, although he was a tenant.

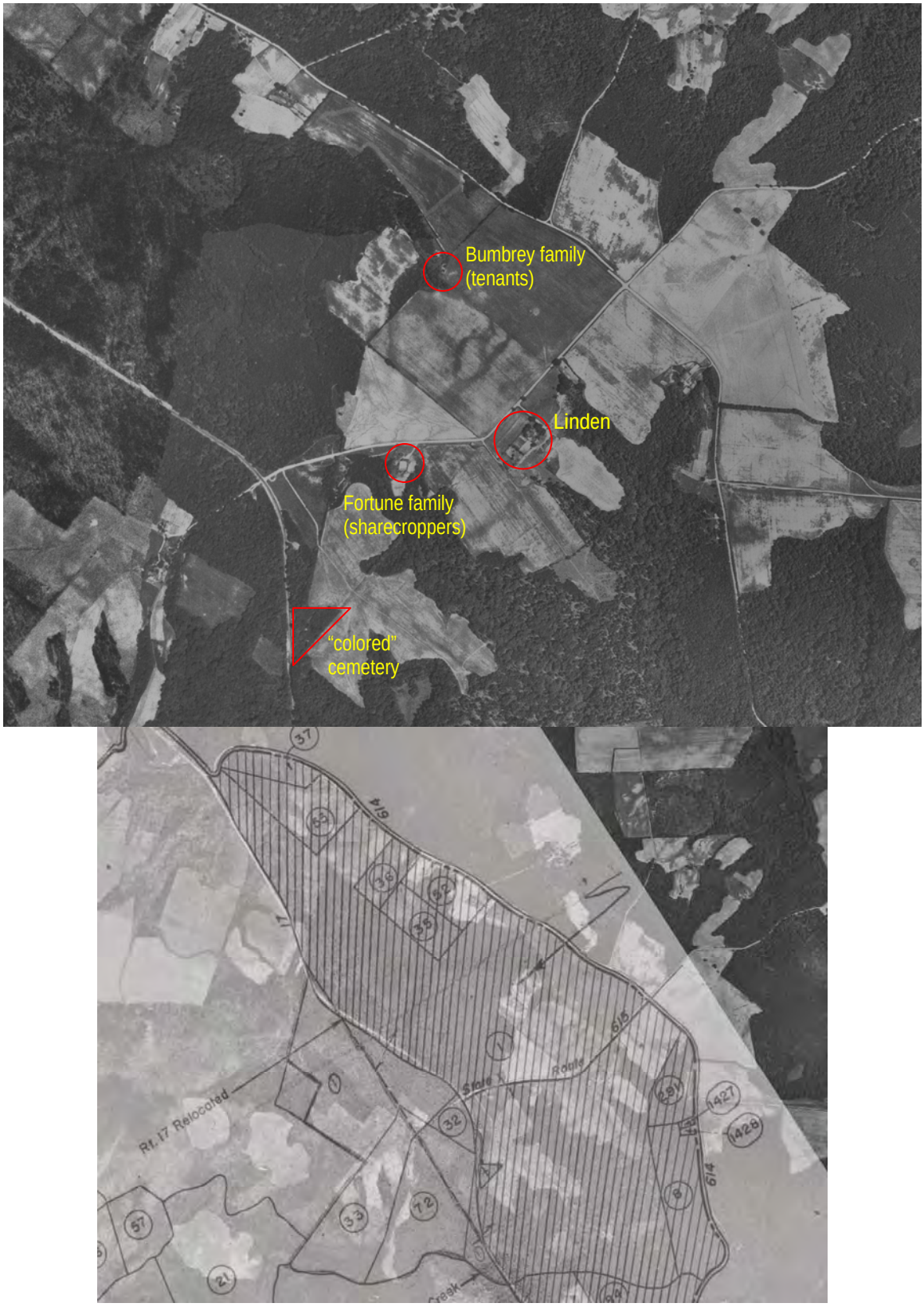
George W. Bumbrey, his father's namesake, recalled, "My parents grew corn and had a garden that had tomatoes, greens, string beans, cucumbers and squash and raised…hogs, pigs, chicken, guinea, duck, goose." He continued, "we [would] grow sweet potato, white potato, and turnips, all that and put them away for the wintertime…Everything we growed [*sic*] was something to eat" (Bumbrey 2007). At his

father's tenant farm, Bumbrey remembered, "We built a barn. When you shuck the corn, you haul it up to the barn called a corn house and shovel it off the wagon, shovel it in the barn. And that was…to feed the cow, horses, and the pigs. And the chickens, had to feed the chickens corn too" (Bumbrey 2007). For the cash needs of the family, Bumbrey recalled, "I worked on the farm. My daddy worked on the farm, and I wasn't making but 3.50 for five days and a half. I always bring it home to give my mother and father. And my father worked on the farm. And so where the money came from, that little bit we was getting, that's the way we lived" (Bumbrey 2007). The farm he referred to in this case was undoubtedly Linden.

In 1937, Linden was recorded as part of the Historical Inventory Project in Virginia. Mrs. Earnest Skinker was interviewed as an informant on Linden. She reported, "The house has always been in the Gouldin family, and is at present, 1937, owned and occupied by Mr. and Mrs. Earnest Skinker. Mr. Skinker married Miss Mary Gouldin" (Farmer 1937d). Although no known photos of the house survive, it was described in 1937:

> The original part of this house was of one and one-half story construction, and had dormer windows…The original part of it has beaded weatherboarding while the newer part is plain.
>
> Part of the roof material on the house is of asbestos shingles while the other part is of wooden shingles. There are bricks between the studding of the house and the weatherboarding. This helps keep the house cool in the summer, and since no wind could possibly get through, it makes it warm during the winter months. All the timber used in the construction of this house was hand-hewn and put together with wooden pegs (Farmer 1937d).

Although the overall acreage of the Linden farm varied somewhat over the years as small parcels were bought or sold, the house itself and the main occupation at Linden stayed in Gouldin family hands. Also in 1937, aerial photos of the property show additional details of the Linden farm, a "colored" cemetery, as well as occupations associated with the Fortune and Bumbrey families.

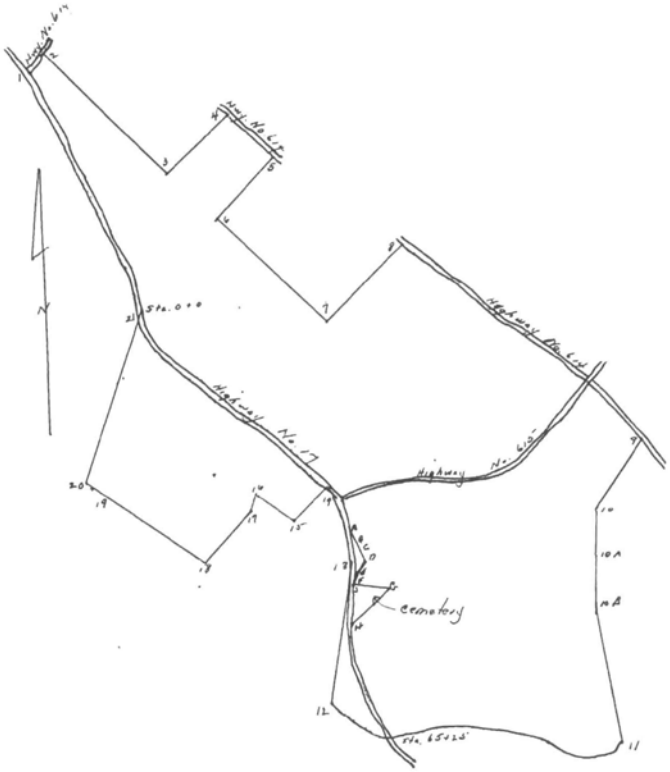


Map 3. Locations of Linden, a "colored" cemetery, the Bumbrey farm and the Fortune farm (top), and Tract 1 (bottom).

In 1940, the entire farm complex, consisting of the Linden house along with tenant farms, was depicted as a single "farm unit, in use," in the 1940 road map of Caroline County.

Map 4. Caroline County road map showing the Linden farm, 1940.

On December 30, 1941, the United States government acquired 687 acres from W. E. Skinker for $28,709.87. In the conveyance, it was noted that the acreage excepted, "a colored cemetery approximately ¼ mile south of the intersection of State Road #614 and Highway #17, being 2-1/10 acres in area, more or less, together with the right of ingress and egress to said cemetery" (CC DB 117:2).



Map 5. Plat of Tract 1 at acquisition in 1941 (CC DB 117:31).

At acquisition, George Bumbrey, son of a tenant farmer, recalled, "We didn't have nowhere to go. We had to find somewhere to go" (Bumbrey 2007). Informant Lois Fortune Garnett was 16 years old at acquisition and elaborated on the plight of the community. "When they said that they bombed Pearl Harbor, we was wondering, 'Where's Pearl Harbor? So that's when I remember hearing it all. Of course, right after that, we started seeing soldiers around because—we were wondering what they were even going to do with A.P. Hill at that time…We didn't have an idea too much what was going on….I don't think they really understood it until—it really hit them when the family—they had to move. And it was kind of sad because everybody would gather together and talk and cry a little bit. It was sad times at that time. We didn't have any say-so in it at all. We just—they gave us a certain time we had to be out, and you had to be out" (Garnett 2007).

Summary: In 1800, the location of modern-day Tract 1 was owned by Charles C. Talliaferro as part of a 1,507-acre tract. Although Gouldin family oral history maintains that the house called Linden was built at about this time, there is no supporting documentary evidence. With Talliaferro's death in 1832, his nephew Theodore Garnett inherited a 260-acre parcel that contains the modern-day location of Linden in Tract 1. Garnett sold the property two years later, with no indication that he had substantially improved it. In 1834, John W. Gouldin (aka Jack), purchased the 260-acre parcel along with other lands as the beginnings of what became a substantial estate. Evidence suggests that Gouldin originally built a house at Linden for his farm manager in *ca*. 1834, then in 1839 had it remodeled for his own occupation. It does not appear that Gouldin lived at Linden full time, but until his death; he retained ownership of the property and house, with either an employee (manager or overseer) or family member in residence. During the Civil War, the house and grounds were occupied by Confederate troops. At his death in 1863, Gouldin had set up his will so that two of his sons were given the choice of different lots of land. Son Dr. Thomas Gouldin chose to take Linden and its associated lands along with other properties. Dr. Gouldin lived at Linden with his family in the 1870s and through time the farm stayed relatively intact and was passed down through female family members; first to Dr. Gouldin's daughter, Molly Lou Gouldin (through *ca*. 1900), and then to her daughter, Mary L. Gouldin Skinker (until acquisition). In the 1920s, the Skinkers substantially remodeled Linden. In the 1930s, at least two tenant farmers/sharecroppers lived and worked on Linden lands: the Fortune family and the Bumbrey family. Informants from both families described the rural lifeways of Caroline County during the Depression era. At acquisition, all of the families who lived on Linden lands had to move, but only the owners, the Skinkers, would have been monetarily compensated for the loss of land.

Tract 18 (Map Sheet 6, Quad E3)

Occupation History: Inspection of the 1937 aerial photo shows a single structure in this small trapezoidal tract in Caroline County. In 1941, the government acquired the property for $1,882 as Tract 18, which encompassed one acre. The structure, Free Mission School, was noted within the tract on the aerial photo, situated at the north end of the tract fronting on Route 622.

The history of Free Mission School is linked with the Rosenwald School Program. In brief, Julius Rosenwald, president of Sears, Roebuck and Co. from 1908 to 1924, "contributed part of his fortune to help rural African Americans throughout the South realize the educational opportunities they sought by building schools" (McClure 2005:115). This program, established in 1917, provided supplemental funds to those raised by local African American communities, to build schools along an established set of plans and adhering to a specific set of guidelines in order to be funded (Green 2003).

The Free Mission School was constructed during the first term of the budgeting year, 1917-1920 (Green 2003). As per the requirements of the Rosenwald Fund, "Each schoolhouse was to be furnished with two sanity toilets, and the building equipped with desks, blackboards and heaters. The school site must include ample space for playgrounds" (Green 2003). Also, "The sites and buildings of all schools aided by these funds would become the property of the public school authorities" (Green 2003). The Free Mission School was a two teacher school that cost $1,200 to construct. Of that amount, the local black community contributed $930, the local white community contributed $20, and the Rosenwald Fund contributed $250 (Green 2003). During this period, Jackson Davis served as a state agent for African-American rural schools for the Virginia Department of Education. In this capacity, he took copious photographs of rural African American schools, including Free Mission, which he described as an, "Old one room Negro school."

Illustration 1. Free Mission School, *ca*. 1917.
Jackson Davis Collection of African American Educational Photographs, Albert and Shirley Small Special Collections Library, University of Virginia.

The photograph depicts the Free Mission School, as well as the proud African American community who raised a bulk of the funds to provide an educational establishment for their children and community. As historians Neville and Clarke (2003) stated so elegantly: "Often the viability of African-American schools in Virginia rested squarely on the shoulders of the parents of the students and African-American communities worked together to build schools, supplying both materials and funding.

Parents offered support financially, through the donation of resources, and by enforcing attendance."

"In 1922, the general Assembly of Virginia passed legislation abolishing local district school boards in favor of county school boards" (Neville and Clarke 2003). On August 22, 1922, well after the school was built, the property was conveyed to Thomas H. Chewning, J. R. Travis, and L. J. Head, who composed the Caroline County School Board (CC DB 91:532).

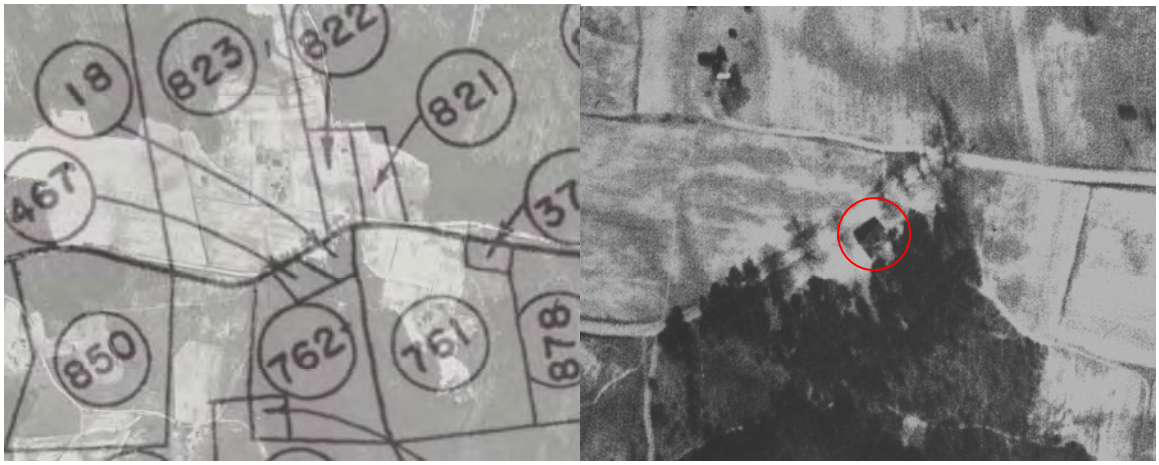
Free Mission was the African American community situated east of Upper Zion, which was predominantly white. Many informants who lived in the area prior to acquisition had memories of Free Mission School. Upper Zion resident Annie Penny Purks (Purks and Upshaw 2008) recalled the Free Mission Community as, "Black. Free Mission Church and school, and that Holmes man had a store." Informant Virginia Wright Durrett (2007) added a few details by noting that, "up the road from us, between us and Upper Zion…it was a black congregation, a black school. And it was called Free Mission. And I don't know anything about them except that there were people coming and going at the proper times. So as far as segregation was down there, there wasn't any animosity brewing."

Closer to the community itself, former Free Mission resident and informant Vergie Lee Miller (2007) added, "We lived in a little community called Free Mission…Well, our post office was Upper Zion. That's where we got our mail. That was about three miles from where Free Mission, the little…church, Union Baptist Church, was right there at Free Mission School." The school was not only the center for education, but also a center for community. "Most times, at the Free Mission School, they would have big picnics or some kind of social at the school, and we used to go over to that" (Miller 2007). The teachers at Free Mission School also became important parts of the local community. Miller (2007) recalled, "Now, when I first got my Social Security card, a lady taught at the public Free Mission school, a Miss Meely (phonetic), and I don't know why she ever did it, she lent my brother—he just learned how to drive, lent him her car to drive to Fredericksburg, take me to get my Social Security. I thought that was—I thought about that the other day, I said, 'You know one thing, nobody going to trust no young boy with a car.' But that's where I had to go." The teachers, "They stayed in homes because they—the two—couple that stayed at Free Mission, they stayed closer than here than up the road to the school with a lady. She boarded most of them that came to that school…One of them was from Norfolk, and one of them was from Goochland. Miss Fannie Meely, I think she was from Goochland. She's the one that lent my brother the car. And then we had one of them, Miss Cunningham, she was from Washington, and she was down there a long time" (Miller 2007).

Another former Free Mission resident, Marie Gray Thornton (2007), added her own recollections, "We moved back to the old place, home place over on…It was in the area of Free Mission, we lived in the area of Free Mission because I attended school there. When we moved back, it was the same area, but we moved out on the road…We moved—our home place burned. Then we moved out on the road, Free Mission Road.

Still in Free Mission, built a home out there. And that's where school was at, too, on that same road. And all the other families, the Jones [see Tract 761], the Greens, the Lonesomes [Tract 823], all of them lived on that road in that area, the Colemans…and we built down below Free Mission school on the same road, on the same road going to Brandywine." Informant Thornton had her own recollections of the Free Mission schoolteachers. "The lower schools, the primary schools, the teachers came out of the area. Miss Mary Fortune she taught at Free Mission. Miss Maggie Jones taught at Free Mission, that was my teacher. Mrs. Harris—I forget her first name, she was from Ashland, she taught at Free Mission because she was my teacher. Mrs. Harris was my teacher, taught fourth grade, she came from Ashland" (Thornton 2007).

In 1937, Free Mission School was captured on an air photo. The small structure was situated fronting directly on Route 622 with the northwestern portion of the tract open and the portion behind the school in woods.



Map 6. Tract 18 (left) and Free Mission School (right) in 1937.

In 1940, Free Mission School was noted on the Caroline County Road Map. The school was noted as a "colored" school, but the community was not named because it lacked a formal post office.

Map 7. Portion of the 1940 road map of Caroline County showing Free Mission School on modern-day Tract 18 as a "school (colored)."

On December 18, 1941, T. H. Chewning, W. T. Powers, W. L. Gravatt and L. G.

Pitts, members and trustees of the County School Board of Caroline County, conveyed the one-acre tract, "said land being known as the Free Mission School" to the United States government for $1,882 (CC DB 116:364). So after serving the African American community for almost 25 years, this Rosenwald School on modern-day Tract 18 was acquired for FAPH.

Summary: This history of Tract 18 begins in *ca*. 1917 as the location of Free Mission School, rather than a domestic occupation. The 2-room Free Mission School was built as part of the Rosenwald Fund program, which provided African American communities matching funds to build schools in the rural South. Participation in the Rosenwald program meant that the schools had to meet certain specifications, including two sanity toilets, desks, blackboards, heaters and space for playgrounds. In 1922, the school was conveyed to the Caroline County School Board as part of a statewide move toward school consolidation. Former Free Mission residents recalled their teachers, who were either local or came from further afield and boarded locally. They were important community members, and the school was a social hub as well as an educational one. Free Mission School served the small African American community until acquisition by the United States government in 1941.

Tract 23 (Map Sheet 2, Quad G9)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the southeastern portion of this tract in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 23, which encompassed 31 acres. One farm complex was noted within the southeastern portion of the tract on the aerial photo.

The history of occupation within modern-day Tract 23 begins with the Kay family, both black and white. In order to trace the history of the occupation, it is necessary to understand the history of the family that ended up inhabiting it. That family was African-American and their story in Caroline County appears to begin in slavery. Without extensive additional research, it is not possible to definitively tell that story. However, based on a variety of primary and secondary sources, the outline of that history can be sketched. In 1850, the white Kay family members were prominent landowners in Caroline County, and slaveholders as well. Robert, John and Edward Kay all had farms that utilized slave labor. Of the three, John Kay owned the most slaves, totaling fourteen. Unfortunately, the names of those individuals were not recorded in the 1850 slave schedule (U. S. Census 1850). However, their ages and genders were recorded, and only John Kay owned an individual who could have been Edmond Kay (also spelled Edmaund or Edmund), who appeared to have learned the skill of blacksmithing on John Kay's farm. It should be noted that research on this family revealed enormous variations in the spelling of names in the primary records.

Although his language is dated, historian Wingfield (1924:167) astutely noted, "When the Civil War closed Caroline's colored population was as large as that of the white race…these people began their career as an independent race with no material possessions." In this specific case, after emancipation, Edmaund Kay was enumerated in

the 1870 census for the Rappahannock Academy area as a 40-year old black male whose occupation was a blacksmith. His family consisted of Fannie (35) who was engaged in "housekeeping," Alpheus (11), Maria (9), Ardry T. (8), Edmund (4) and James F. (1). It was noted that Fannie and Alpheus could not read or write. At this time, Edmaund Kay was not assigned any value of real estate, which suggests that he did not as of yet own his own land, but he had definitely settled in the Rappahannock Academy area (U. S. Census 1870).

By 1880, Kay (also spelled Key) is listed as the head of household, aged 45, and his occupation was blacksmith. The rest of his family consisted of his wife, Caroline (34) who was keeping house, son Sefeus (22) who was a farmer, daughter Mariah (20) who was keeping house, son Archie T. (18) who was a farm laborer, son Edmond T (15) who was a farm laborer, younger children James F. (10), Ticiberious (3), Caladonia (2) and Dallus M. (infant). Also in residence with the family was a William Taliaferro (45), a farmer, who might have been helping out with the farming while Edmond Kay tended to his blacksmithing (U. S. Census 1880). In 1888, Kay daughter Maria Ellen (also noted as Mariah) married Clarence Taylor. Their marriage license listed Maria's parents as Edmond and Fannie Kay, which suggests that Edmond's wife alternately went by the formal name Caroline and the nickname Fannie, as both are used alternately through the public records (CRHC file #2004-040-074-076).

In Rappahannock Academy in 1890, Edmund Kay was listed as a "coach and wagon builder," an obvious expansion of his skills as a blacksmith. Edmund Kay was also listed as a "principal farmer" in the Rappahannock Academy area. In 1897, Edmund Kay was listed again as both a "coach and wagon builder" and "principal farmer" in the Rappahannock Academy area (Fall 1989:320-321).

The early twentieth century saw the next generation of the Kay family come into its own. On June 20, 1900, the Kay household consisted of its head, Edmond T. Kay (65), a landowning blacksmith, who had been married to his wife, Caroline F. (44) for twenty-four years. The rest of the family consisted of son Tiberious T. (23), single and a farm laborer; son Del M. (20) who had followed in his father's footsteps by becoming a blacksmith; Fanny L. (18), Climmy T. (14), Laurence L. (11), Bernard W. (10), Douglas (8), Bessie (6) and Clara (3). All of the younger children (aged 14 and younger) attended school during the year, and all of the older members of the family could read and write (U. S. Census 1900). That same year, Tiberius Kay, son of Edmond and Caroline Kay, married Laura Grimes, daughter of Fayette and Sallie Grimes. Both families were noted as "colored" (CRHC file # 2004-040-086-059). Tiberius was a farmer in the Kay family and his marriage marked a transition in the direction toward a farm of his own. In 1906, Tiberius' father, Edmund Kay, was listed as a "blacksmith and wheelwright" as well as a principal farmer in Rappahannock Academy (Fall 1989:321).

By 1910, Tie Kay (also known as Kay Tie and Tyrus Kay), had established a family of his own. That year, he was 33 years old, married to Laura (27) and together they had children Ida (9), Alfred (7), Burly (6), Edmond (4), Eliza (2) and Bertha (2 months). On August 12, 1916, Tie Kay purchased a 31 acre farm from B. C. Holmes (CC

DB 84:225), establishing the occupation on modern-day Tract 23. Four years later, Tie Kay's family had grown as they lived on the farm on modern-day Tract 23. In 1920, head of household Tyberius Kay (43) lived with his wife Laura (39) and children Ida B. (19), Alfred (16), Burly (15), Edmund (14), Eliza (13), Bertha (11), Marion (7), Maurice (4) and Nellie (3). All members of the family were described as "mulatto" (U. S. Census 1920). Tie Kay and his family remained farming on modern-day Tract 23 for the next ten years, although two of his older sons married and left home in the 1920s (CRHC files #2004-040-108-062 and 2004-040-110-048). In 1930, the family was enumerated again, although with significant variations in the spelling of names. Tex Key was the 54-year old "negro" head of household. He was joined by his wife, Lara (45), and children Liza (20), Bertha (18), Marion (16), Morris (14), Nellie (12) and Allie (8) (U. S. Census 1930).

In *ca*. 1934, Maurice Kay married Gracella Jones and they had their first child, Cleopatra Kay. Because the new parents were young, Maurice and Grace lived with the Kay family, while Cleo was raised by her maternal grandmother (see Tract 190). However, informant Cleopatra Kay Coleman well remembered her paternal grandfather's farm and described it. "My grandfather…raised a big field of black-eyed peas, and that was an onerous job, too, shelling those darn things. They had long pods, and they scratched your fingers and so forth, but the other large field that he raised on his farm was that of sweet potatoes. And so as far as the eye could see, you'd see sweet potato plants. And then they were dug in the fall and preserved in sand down under the house where there was a cool area, and then you could eat sweet potatoes all during the winter" (Coleman 2007). Coleman (2007) also noted on that farm, "my Big Grandmother had horses, yeah, they had, and a couple of mules as well." Coleman (2007) described her grandmother, "Her name was Laura, Laura Louise. She was a heavy-set woman, quite fair…Big Grandmother was quite fair, reddish hair. You know in that day and time, there were still traces in many black families of what had gone on—what had happened during the time of slavery, that is, when slave masters fathered children by both their wives and by their slaves. And so my Big Grandmother was an obvious second generation from that…She believed, of course, strongly in family and church and the community and that kind of thing…And one of the very fine memories I have of going to Big Grandma's was always that of being given a baked sweet potato. That was my favorite after-school snack." Coleman (2007) also remembered her "Grandmother's three-legged iron kettle…that she made apple butter in and applesauce in and cooked the lard in after the pigs had been killed and washed clothes in."

In 1937, the Kay family farm was captured on an aerial photograph. In it, the farmhouse and some outbuildings are visible. Approximately half of the 31 acres is in cultivation, and the other half remained forested.

Map 8. Tract 23 (left) and the Kay family farm (right) in 1937.

In 1940, the farm on modern-day Tract 23 housed the large Kay family. Tebearis B. Kay was the 63-year old head of household who farmed his own land, which was valued at $500. His wife, Laura L. (57) was occupied with housework. Son Berley (31) was listed as a wood chopper at a tie works. Although his language is dated, historian Wingfield (1924:167) noted that, "At this period the railroad passing through Caroline bought large quantities of wood, all engines being wood-burners, and so the cutting of cord-wood and railroad ties gave much work to the colored people of the county." The census also noted that Kay son Allie (18) was a farm laborer. Daughters Bertha L. (27) and Marion V. (22) worked as maids in family homes. Daughter Nellie B (16) was in school. Cleo Kay Coleman's parents continued to live on the Kay farm. Maurice (24) was a laborer at the cellophane plant in Fredericksburg. Maurice's wife, Grace L. (20) helped with housework. Their two other children, Allen D. (4) and Mildred (3) also lived on the Kay farm (U. S. Census 1940). On the 1940 Caroline County road map, the Kay farm appears marked as a "farm unit, in use."

Map 9. Portion of the 1940 road map of Caroline County showing the Kay family farm as a "farm unit, in use" on modern-day Tract 23.

On June 3, 1941, modern-day Tract No. 23 was also called Parcel No. 1 as part of District Court case No. 1555-M, the condemnation of nine parcels encompassing 291.5 acres including the 31-acre Kay farm, conveyed from Tie Kay (also known as Kay Tie) to the United States government for the amount of $556 (CC DB 144:259).

Summary: The history of occupation of modern-day Tract 23 is tied directly to the history of the Kay family in Caroline County. Evidence suggests that Edmund Kay was a slave on John Kay's farm in the 1850s, where he might have learned his trade, blacksmithing. After emancipation, Edmund Kay became a successful blacksmith/wheelwright/wagon and coach builder, as well as farmer, in the Rappahannock Academy Area. With his wife Caroline (also known as Fannie), he raised a large family, all of whom learned to read and write. One of Edmund's many sons, Tiberius, became a farmer. In 1900, he married Laura Grimes and together they started their own family. In 1916, Tie Kay (as he was known in his adulthood), purchased the 31-acre farm that is the occupation on modern-day Tract 23. Tie and Laura had a large family of their own and successfully farmed their 31 acres. In 1934, their son Maurice married Grace Jones. They stayed on the farm with most of their children, except their oldest. Although their daughter Cleopatra lived with her maternal grandmother, she made frequent visits to the Kay farm, describing the fields of black-eyed peas and sweet potatoes that her grandfather grew there. In 1941, the U. S. government acquired the 31-acre farm on modern-day Tract 23 where the family of Tie Kay had lived and farmed since 1916. Tie Kay's family represented a continuation of the Kay family legacy of farming and industry in the Rappahannock Academy area after having come out of slavery.

Tract 33 (Map Sheet 2, Quad H7)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the northernmost portion of this tract in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 33, which encompassed 54 acres. One large farm complex, Maywood, was noted at the north end of the tract on the aerial photo.

Evidence suggests that the origin of Maywood within modern-day Tract 33 dates to "about 1780" (Farmer 1937e). Reportedly, "The first known owners of this old house was a family of Merrymans. It is known that they occupied the house in the early part of 1800" (Farmer 1937e). The Merryman family (also spelled Merriman and Meriman) came to Caroline County from Lancaster County sometime prior to 1772. At that time, Adam Merryman was known to have been a resident of Caroline, and to have died there (Campbell 1954:441). Because many of the colonial and early records of Caroline County were destroyed during the Civil War, information about Merryman acquisition of property in Caroline County is sketchy. It is known that upon the death of Thomas Merriman, Adam's father, that he gave each of his sons "a plantation as they come to age equally to be divided if they will, the eldest the first choice as they come to them & their heirs forever" (Lancaster County Will Book 10:275, hereafter cited as LC WB). This will suggests a possible source of Adam Merryman's property ownership in Caroline County. By the time of Adam's own death in 1772, he had married and fathered five children, including Thomas Merryman (Campbell 1954:484). Of Adam Merryman's five children, three were boys and two were girls. All three of the Merryman sons served in the Revolutionary War, not necessarily all with distinction. Thomas Merryman served on board the Continental sloop *Mosquito*. On September 13, 1776, it was reported: "Deserted from on board the *Muskito* cruiser, lying at *Warwick*, capt. *Issac Younghussband*, two marines, viz…*THOMAS MERRYMAN*, about 5 feet 10 inches high, who has a down inoffensive look; he is an inhabitant of *Caroline* county, where I imagine he is gone" (Coggins 2002:203, Purdie 1776:4).

Thomas Merryman married Bathsheba Doggett, and together they had a single son, Presley Merryman, born *ca*. 1780 in Port Royal. Evidence suggests that Thomas Merryman was the original builder and occupant of Maywood. Thomas died in *ca*. 1783 related to his participation in the American Revolutionary War. Thomas' two brothers also gave their lives to the cause of independence. His son, Presley (also spelled Presby) Merryman, appeared to have inherited his land, and without a doubt he owned the land where modern-day Tract 33 is located. He appears to have been in residence at Maywood. On June 26, 1800, Presley Merryman married Elizabeth Oliver, with whom he had children Maria, Mildred, Lucy, Madison, William Benjamin, Judah and Mary Merryman (CRHC file #2004-040-027-039).

Presley Merryman made his first appearance in the census records for Caroline County in 1810 (U. S. Census 1810). In 1817, Presley Merryman filed suit against his cousins, claiming rights to the property he was occupying, presumably Maywood. Presley claimed the property as sole heir through his father, Thomas, and from Adam before him

(Hopkins 1987:72). Presley Merryman prevailed in his case and continued to appear in the Caroline census in 1820 (U. S. Census 1820). At some point before 1824, Presley's first wife Elizabeth had died. Presley remarried, this time to Catherine Berry on April 12, 1824. Presley and Catherine had numerous children together: Ann, Thomas, Martha Jane, Presley, Philip, Montague, Bechley and Hamson.

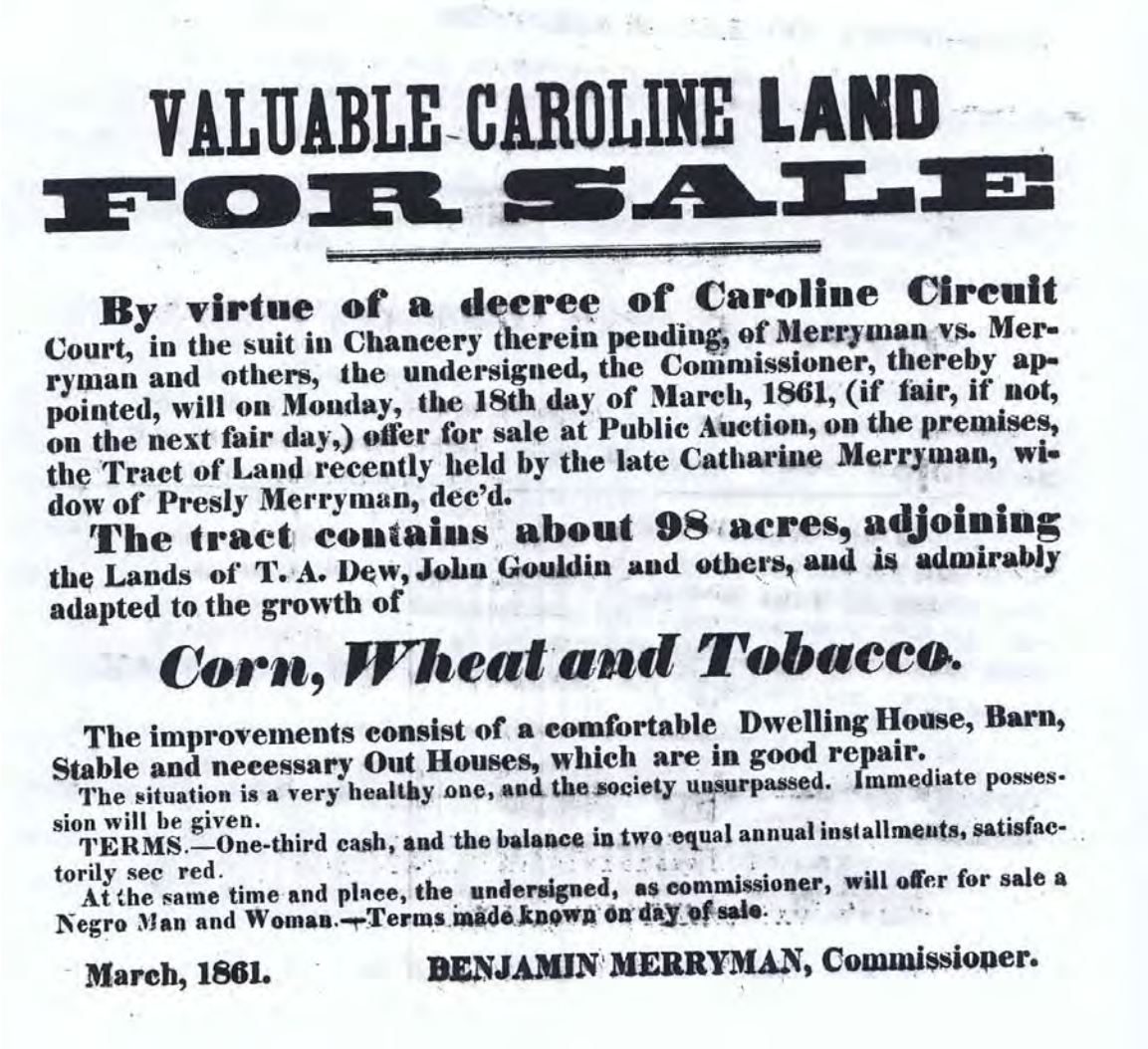
On September 17, 1831, Presby Merryman penned a deed of trust to Robert G. Holloway (see Tracts 221 and 283) as trustee on behalf of Catherine Merryman and the Merryman children from both of Pesby's marriages. The deed noted that, "the said Presby Merryman is anxious to distribute his real and personal estate among the second party [Catherine and his children] to this indenture. Now in consideration of the natural love and affection to the said second party, and for and in further consideration of the sum of one dollar in hand paid to him by the said second party, he the said Presby hath given, granted, bargained & sold & by these presents doth give, grant, bargain and sell to his three daughters Maria, Judah & Mary one half of the tract of land on which he the said Presby resides equally to be divided among them" (CC DB 46:486). Presby Merryman also stated that his wife, Catherine, retained the right to live on the 98 acres until her death, and at that time, the land should descend to Presby's children. The 98 acres contains modern-day Tract 33 and the location of Maywood, where the Merrymans were living. In 1835, Maria married John Greenstreet. After the marriage, the Greenstreets lived in Essex County (U. S. Census 1840). In *ca*. 1839, Judah (also Judith) married John Purks (also Perks) (CRHC file #2004-040-220-029). After their marriage, the Purks family took up residence five houses away from Maywood. John and Judith Purks' closest neighbor was Judith's older sister Martha Jane, who had married James Bonaparte Skinker (U. S. Census 1850).

In 1841, Presby Merryman died (CRHC file #2004-040-220-029). His widow, Catherine, continued to live at Maywood, although she did not own it. On April 6, 1847, Catherine Merryman purchased the Maywood property from her son-in-law John Greenstreet for $300 (CC DB 46:488). Three years later, her household was enumerated in the 1850 census. At that time, she was 57 years old and the head of household. She owned $600 worth of real estate. The rest of her household consisted of her unmarried children: Ann (24), Montague (18), Bechley (17) and Harmon (11). Both Montague and Bechley were listed as farmers, and it was noted that both Bechley and Harmon attended school during the year. It is interesting to note that in 1850, Catherine's son Presley (20) lived next door and was listed as "manager," undoubtedly farm manager for his mother at Maywood. And as mentioned previously, two houses down from Presley were the households of James B. and Martha Jane Skinker, next door to John and Judith Purks—all of whom were family (U. S. Census 1850). In addition to those members of her family, Catherine Merryman was enumerated as the owner of three slaves. She owned a 37-year old male, a 35-year old female and an 18-year old female (U. S. Census 1850, slave schedule).

In 1860, Catherine Merryman died (CRHC file #2004-040-220-029). By the conditions of her late husband Presby Merryman's 1831 deed of trust, his intention was for that legal instrument to act "as if this was his last Will & Testament" (CC DB

46:486). By the conditions of that document, upon Catherine's death, the 98-acre Maywood property was to be divided equally amongst the children from both of Presby's marriages. However, following his mother's death, Bechley B. Merryman presented his case to the Circuit Court arguing that, "the said tract of Land contains about 98 acres, worth about twelve dollars per acre, and cannot be divided among the parties…because they are so numerous and their interests are unequal, and that the interest of all the parties would be greatly promoted by a sale of the whole tract, that is, of the portion held by the late Catherine Merryman for life as well as the portion conveyed to the said Maria, Judith & Mary Merryman by the said Presley Merryman" (CRHC file #2004-040-220-029).

Bechley Merryman's suit was successful, and on March 18, 1861, Maywood was sold at auction.



VALUABLE CAROLINE LAND

FOR SALE

By virtue of a decree of Caroline Circuit Court, in the suit in Chancery therein pending, of Merryman vs. Merryman and others, the undersigned, the Commissioner, thereby appointed, will on Monday, the 18th day of March, 1861, (if fair, if not, on the next fair day,) offer for sale at Public Auction, on the premises, the Tract of Land recently held by the late Catharine Merryman, widow of Presly Merryman, dec'd.

The tract contains about 98 acres, adjoining the Lands of T. A. Dew, John Gouldin and others, and is admirably adapted to the growth of

Corn, Wheat and Tobacco.

The improvements consist of a comfortable Dwelling House, Barn, Stable and necessary Out Houses, which are in good repair.

The situation is a very healthy one, and the society unsurpassed. Immediate possession will be given.

TERMS.—One-third cash, and the balance in two equal annual installments, satisfactorily sec red.

At the same time and place, the undersigned, as commissioner, will offer for sale a Negro Man and Woman.—Terms made known on day of sale.

March, 1861. BENJAMIN MERRYMAN, Commissioner.

Illustration 2. 1861 auction poster for Maywood (CRHC file #2004-040-220-029).

Neighboring landowner John ("Jack") Gouldin (see Tract 1) was the highest bidder at the auction at which he acquired the 99-acre Maywood, which included a dwelling house, barn, stable and necessary out buildings. The property became part of Gouldin's larger landholdings on which he grew corn and wheat (Beck 2012). In his will of 1863, John

Gouldin gave, "the land I bought of the Estate Cath. Merryman" to his son Thomas W. Gouldin, along with other properties (CRHC file #2004-040-246-028). There is no evidence to suggest that Thomas W. Gouldin occupied Maywood during the early 1860s because he was living elsewhere (see Tracts 1 and 203), and it is unclear who occupied the farm during that time. However it was noted that, "There are trenches near this house that were dug by the soldiers during the War Between the States" (Farmer 1937e), and it's very possible that both the Maywood house and farmlands were used by Confederate troops during the Civil War, as was the case at many nearby properties. The house's appearance as an unmarked occupation on the 1864 Gilmer map suggests that there was no family in occupation at the time. It is equally possibly that Thomas Gouldin continued to run Maywood as one of his many farm properties during the war or that tenants were in residence.

Map 10. 1864 Gilmer map depicting an unmarked house, Maywood.

On December 4, 1865, Thomas W. and Louisa E. Gouldin sold the property to brothers George T. Peregoy (also spelled Peregroy), Henry T. Peregoy and James F. Peregoy (CC DB 52:222). The property was described as, "a tract of land, on Mount Swamp, in Caroline County, containing about ninety eight and three quarter acres…And whereas the said George T. Peregoy has died, by reason whereof his part of the said land has descended to his Mother, the said Lydia Peregoy and his two brothers" (CRHC file #2004-040-235-055-5). The Peregory family hailed from Madison County, but George's younger brother, James, married Virginia F. Greenstreet in 1866, sister to John and James Greenstreet (who were married to Maria and Mary Merryman, respectively), making them in-laws to the Merrymans, the original owners of Maywood (CRHC file #2004-040-052-097). It is unclear if or how long George Peregoy occupied Maywood, but it appears that members of the Peregoy family might have lived there. After Peregory's death in 1866, Walter G. Hudgin and Robert Hudgin were made trustees of Peregory's estate (CRHC file #2004-040-235-055). On May 22, 1874, the Hudgins put Maywood up for

auction. The special commissioners noted, "At the sale the bidding was spirited and there were several competitors for the place, at least three bidders and several others were there who expressed their intention of bidding—Upon the sale the sum of $805 was bid by John T. Massey to whom the property was knocked down and upon consultation with Mr. Welch who represented all the creditors, as far as your commissioner as advised he concurred with them in the opinion that this was a very good sale & is willing for it to be confirmed" (CRHC file #2004-040-235-055). On June 2, 1874, the sale from Walter G. Hudgin, trustee, to John T. Massey of the Maywood property was confirmed (CC DB 55:484).

In 1880, Massey was enumerated in the census and in occupation at Maywood. He was a 40-year old head of household and farmer. He was married to 30-year old Louisa Massey, but had no children living in the household. John's mother, Caroline (age 60), lived with them, as did the 21-year old Smith Lee (U. S. Census 1880). Massey retained ownership of Maywood and farmed it until 1881. On March 23rd of that year, he sold the property to William L. Taylor (CC DB 58:579).

William L. Taylor's purchase of Maywood marked an important transition in the history of the property to a long tenure by the Taylor family. In the years to come, Maywood passed from father to son over three generations. Two years after the initial acquisition in 1881, William L. Taylor sold Maywood to William F. Taylor on April 9, 1883 (CC DB 59:519). That same year, William F. Taylor married Emma T. Taylor (CRHC file # 2004-040-069-116). In 1900, William F. Taylor and his family were enumerated at their residence of Maywood, next door to Louis and Mollie Gouldin at Linden (see Tract 1). The Taylor household consisted of William F. (head of household, age 69), wife Emma (age 44), daughters Lora (14) and Emma S. (7), and son William H. (10). William F. was noted as a farmer who owned his land, and all three children attended school during the year (U. S. Census 1900).

Five years later, William F. Taylor died. In his will, William F. Taylor stipulated:

> I give and devise to my wife Emma Taylor for her life all of my property both real and personal. At her death I devise all my property to my three children Lora, William and Emma Sextina Taylor for their lives as tenants in common. If one or more of said children shall die before their mother the part I devise to the one so dying shall go to those who survive. If either of my said three children shall marry his or her life interest in my estate shall vest in those that remain single. My object is to provide a home for my three children abovenamed as long as my said two daughters remain single and my said son is a minor, and when any one of the three marries or dies, I wish the survivor to enjoy my estate for his or her life or until he or she marries. When my said two daughters shall marry or die and my son shall attain the age of twenty-one years, then I wish my estate divided into six parts and I devise on sixth part thereof to each of my children now living and the other sixth part to the children of my deceased daughter Mary F. Green (CRHC file #2004-040-354-020).

By 1910, only William Taylor and his mother remained at Maywood, his sister Emma having married John T. Holloway and left home. William H. was 19 years old and the head of household, his mother a 53-year old widow (U. S. Censes 1910). Ten years later, little had changed. William (30) was the unmarried head of household and lived with his widowed mother, Emma (63), at Maywood (U. S. Census 1920). After such a long tenure farming at Maywood, the year 1929 brought a fundamental change for William H. Taylor. That year, his mother Emma died (CRHC file #2004-040-378-022). On February 1, 1930, W. H. Taylor purchased her portion of the Maywood property from Thomas H. Blanton, Special Commissioner from his mother's estate (CC DB 99:505). That year, the number of residents at Maywood increased dramatically. The still unmarried W. H. Taylor remained head of household, but was now joined by his sister, Emma, his brother-in-law, John T. Holloway (also spelled Holaway) and their family of four children ranging in age from 15 to 11, plus 19-year old adopted son, Charles Lench (U. S. Census 1930). Their return to Maywood was for one last conveyance of the property within the Taylor family. Also on February 1, 1930, W. H. Taylor conveyed his ownership of the farm to his brother-in-law, J. T. Holloway (CC DB 99:508).

In 1937, Maywood was recorded as part of the Historical Inventory Project in Virginia. Historian Farmer (1937e) described Maywood as:

> This is a rectangular frame house of one and one half story structure. It has a gabled roof covered with shingles. There are two chimneys, one on each end east and west. The house faces north.
>
> There are ten windows. The panes are eight by ten inches and there are nine panes in the upper sash and six in the lower. There are no blinds on the windows. There are two dormer windows on the front.
>
> There are four rooms, two rather small. The ceiling height is approximately ten feet. The stairway is of the enclosed, one light type with three or four winding steps at the bottom. The original floors, which are made of pine and are about six inches wide, are still here. Although this house was built about 1780 it has never been remodeled.

Illustration 3. Maywood in 1937 (Farmer 1937e).

Also in 1937, aerial photos of the property show additional details of the layout of the Maywood farm.

Map 11. Tract 33 (top) and the Maywood farm with house and barn (bottom).

In 1940, the U. S. census captured one last snapshot of the Holloway family in residence at Maywood. John T. Holloway was the 56-year old head of household and was listed as a farmer. His household consisted of his wife, his 47-year old wife, Emma S. (nee Taylor), who was keeping house and their unmarried children: sons Franis F. (25) and James H. (22), and daughters Elizabeth S. (24) and Emma J. (21). Franis F. was listed as a carpenter/builder who had earned $900 for his work over the course of the year, and James H. was listed as a farm laborer. Emma J. had attended school during the year, having completed her first year in college. Elizabeth S. worked in the home (U. S. Census 1940). Also that year, the Maywood farm was depicted on the 1940 Caroline County road map as a, "farm unit, in use," and situated north of Mount Creek.

Map 12. Caroline County road map showing the Maywood farm, 1940.

On August 30, 1941, John T. and Emma S. Holloway, who had by then moved to Fredericksburg, conveyed 59 acres, including the location of Maywood, to the United States government for $5,900 (CC DB 115:189). This parcel was the same as modern-day Tract 33.

Summary: The history of occupation within Tract 33 is tied to the Maywood farm, which was originally built and occupied *ca*. 1780 by the Merryman family. Evidence suggests Thomas Merryman, who fought and died in the American Revolution, was the person who built Maywood and its first occupant, along with his family. After his death, the property descended to Presley Merryman, who married twice and had numerous children by both marriages. Presley Merryman conveyed the Maywood property in a deed of trust to Robert Holloway on behalf of his wife, Catherine, and three of his daughters. Presley Merryman died in 1841, and eventually all his daughters married and moved away, although most stayed in the immediate neighborhood of Maywood. Catherine stayed on at Maywood until her own death in 1860. At her death, the property was supposed to have been divided amongst the many heirs of Presley Merryman. However, his youngest son petitioned the court to sell it instead and to divide the proceeds of its sale to the heirs. In 1861, Maywood was sold at auction to John Gouldin, who died in 1863 and left the property to his son, Thomas W. Gouldin. The Gouldin family owned numerous properties in the area, and there is no evidence that any of them lived at Maywood. During the Civil War, it appears that Confederate troops occupied the farmland, possibly even the house. In 1865, Thomas Gouldin sold Maywood to George T. Peregoy and his brothers. Peregoy died the year after and his mother inherited his portion of the property. The Peregoy family lived in Madison County, but one of the Peregoy brothers had married into the Greenstreet family, in-laws with the original Maywood owners, the Merrymans. The Peregoy estate was settled by the Hudgins brothers, who sold Maywood at a spirited auction in 1874 to John T. Massey, who sold it again in 1881 to William L. Taylor, thus beginning a long tenure by that family. In 1883, William L. Taylor sold Maywood to his son, William F. Taylor, who lived there and farmed the property until his death in 1905. In his will, William F. Taylor stipulated that his widow, Emma, had the right to live there until her death, and that his unmarried children retained their right to shared tenancy. Taylor's daughters married and moved on,

but his son, W. H. Taylor stayed unmarried and farmed Maywood with his widowed mother until her death in 1929. The following year, W. H. Taylor's married sister, Emma Holloway, returned to Maywood with her husband, John T., and family, who bought the farm and took it over. John T. and Emma Holloway lived at Maywood with their family and farmed the property until it was acquired by the United States government in 1941.

Tract 36 (Map Sheet 2, Quad J6)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the northeastern portion of this tract fronting on Route 614 in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 36, which encompassed 14 acres. One small occupation was noted on the northeastern portion of the tract, with a majority of the acreage in cultivated fields on the aerial photo. Only a small strip along the eastern boundary remained forested.

The history of occupation of modern-day Tract 36 is a short one. Although many land histories in the immediate vicinity are long, dating back to the antebellum period, this occupation was more recent, dating to the early twentieth century.

In 1922, Robert Cole, son of Albert and Jennie Cole, married Cora Jane Jackson, daughter of Bently and Denia Jackson. Both families were described as "colored" (CRHC file# 2004-040-108-026). The Jacksons were long-standing residents of the Port Royal area (U. S. Census 1910), but evidence suggests that the Cole family was not local. On February 23, 1927, Robert Cole purchased the 14 acres that is modern-day Tract 36 (CC DB 96:596).

By 1930, "negro" head of household Robert Cole (38) lived on modern-day Tract 36 with his family consisting of his wife, Cora (30), and their sons Henry (6) and Fred (4). Very few other primary documents were uncovered about the Cole family. However, informant information provided additional insight into the occupants of modern-day Tract 36.

Former neighbor and informant Lois Garnett (2007) remembered, "Well, we lived in a little community. There were the Cole family, the Chambers family [see Tract 52], the Wallace family, the Jackson family, and our family. And we all kids played together. We traveled by foot from house to house. And not too many people had cars at that time. My father had a car, the Chambers had a car, the Coles had a car." In 1937, the Cole occupation was captured on an aerial photograph. A majority of the tract was open with a small house and possible outbuilding visible fronting on Route 614.

Map 13. Tract 36 (left) and the Cole home (right) in 1937.

In 1940, the Cole home was marked on the Caroline County Road map as a, "farm unit, in use." In this case, evidence suggests that the farm production was for family use only, and that Robert Cole and his son, Fred, worked on the Garrett farm for wages.

Map 14. Caroline County road map showing the Cole house, 1940.

According to informant John Golden Garrett (2007), "they worked there [his father's farm] regular, I mean, year round. And they were pretty good at that kind of stuff. Well, just before A.P. Hill came in, they built a house right on the edge of A.P. Hill. And then when A.P. Hill come in, they took that house, and they moved back on the farm for a little while. And the young fella, he went to work at Quantico and built a house up near Fredericksburg, and his dad moved in with him. [Their names were] Cole, Robert Cole and Fred Cole." The Coles worked for J. W. Garrett, whose farm at Moss Neck fell outside FAPH lands (United States 1942a).

On August 21, 1941, Robert and Cora R. Cole of Moss Neck sold their 14 acres to the United States government for $950 (CC DB 115:158), a price that probably reflects the relative newness of their house. Although their occupation was a short one, the Cole family was an integral member of the local community.

Summary: The history of occupation on modern-day Tract 36 dates no earlier than 1927, when Robert and Cora Cole purchased the 14 acres and built a home for their family. They lived on the land, and grew crops for family use. Robert Cole and his son Fred worked for wages on J. W. Garrett's nearby farm. The Coles were members of a small, tight knit community of African-American families whose houses were situated along Route 614. This relatively new house was taken by the United States government in 1941 and the Cole family left the area.

Tract 52 (Map Sheet 2, Quad J6)

Occupation History: Inspection of the 1937 aerial photo shows occupation in two clusters on this tract all fronting on Route 614 in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 52, which encompassed 15 acres. Occupations were noted on either end of the tract (northwest and southeast). Evidence suggests that the larger cluster of buildings on Tract 52 represents the main farm occupation, whereas the secondary small occupation was by a family member in the 1930s. About half of the acreage was in cultivated fields on the aerial photo. A section of the tract between the occupations remained forested.

The history of occupation on modern-day Tract 52 is intertwined with the history of the African-American Chambers family. Lee Chambers was born in 1835, into slavery in Mississippi. Upon emancipation, and by 1870, Lee Chambers had left his home state and settled in Caroline County, Virginia, where he was a farm laborer. At that time, Lee Chambers was unmarried, but appeared to be living with family members. He did not own any land yet (U. S. Census 1870). The history of occupation on modern-day Tract 52 began *ca.* 1880. By that time, Lee Chambers had married and started a family. At 45 years old, he was the head of household and a farm laborer. The rest of his family consisted of his wife, Charity (30), who worked as a servant; daughter, Maggy (12), who was at school; and his four sons, who were all at home. They were Alexander (8), George (5), Isia (2) and Major (1). Evidence suggests that although the Chambers family was living on modern-day Tract 52, it was in the capacity of renters from the Gouldin family, rather than owners (U. S. Census 1880). Although his language is dated, historian Wingfield (1924:167) importantly points out that, "During the first few years following the war nearly all of the Negroes in the South lives [sic] in rented houses, and many of them worked as 'share-croppers' on the lands of their former masters."

The late 1890s brought a lot of change to the Chambers household. Between 1897 and 1898, the three oldest sons married and left home (CRHC file # 2004-040-083-025 and # 2004-040-084-15). Notable among them was the marriage of Isaiah Chambers to Maggie Byrd in 1898 (CRHC file # 2004-040-084-016). Two years later, Lee Chambers was still on the farm on modern-day Tract 52 as the 65-year-old head of household and a farmer. The rest of the household consisted of his wife of 26 years, Charity (54); son David (16), a farm laborer; daughter Etta (12), who was at school; and son Perry L. (9), who was also at school. Records indicate that the Chambers family rented their farm from the Gouldins, and they were living next door to the Louis Gouldin family (see Tract 1,

Linden), which would place the Chambers on modern-day Tract 52 (U. S. Census 1900). By 1910, Lee Chambers had died. The youngest Chambers son, Perry (20), had taken over the farm as the head of household. He was joined on the farm by his widowed mother, Charity (59), his sister Etta (23) and Etta's daughter, Oria (7) (U. S. Census 1910). On January 3, 1917, Isiah Chambers purchased the 15-acre farm that his family had worked previously as renters (CC DB 114:475). By 1920, Isaiah Chambers' family had taken over the main occupation on modern-day Tract 52, which is the easternmost, larger farm complex. That year, 42-year old Isaiah was the head of household, joined by his wife, Maggie (37), sons Bernard (19) and William (13), as well as daughter Edna (11) (U. S. Census 1920). A decade later, Isaiah Chambers still lived on his farm on modern-day Tract 52 along with his wife, Maggie. None of their own children remained at home, but their grandchildren, Catherine Smith (2) and Pernell Smith (an infant), had joined the household from their birth state of Maryland (U. S. Census 1930).

Informant Lois Garnett (2007) was part of that community in the 1930s. She recalled, "Well, we lived in a little community. There were the Cole family [see Tract 36], the Chambers family, the Wallace family, the Jackson family, and our family. And we all kids played together…We traveled by foot from house to house. And not too many people had cars at that time. My father had a car, the Chambers had a car."

Informant Alberta Bumbrey Henderson also remembered the tight-knit community that she grew up in during the 1930s. She recalled, "One thing, all the neighbors look out for each other, you know. Like killing hogs time, all of them come over and help kill and help put the meat away. Then the next one, they help each other. And this woman named Miss Chambers [Maggie Chambers]…she used to make our clothes. Take feedbags, and the man at the store, Mama said that all the feedbags with print, you know with pretty ones, and this lady used to make the skirts—we didn't wear no pants—and dresses…Good neighbors" (Bumbrey and Henderson 2007).

In 1937, the Chambers farm was captured on an aerial photograph. The main farm complex was situated on the eastern side of modern-day Tract 52 with a house and a variety of outbuildings noted. It is surrounded by cultivated fields. A second occupation was situated on the western portion of the tract, which evidence indicates was occupied by the Chambers' oldest son, Bernard. The house is also surrounded by cultivated land, which suggests that he engaged in raising some farm crops for home use.

Map 15. Tract 52 (left) and the Chambers farm (right) with the main farm complex as well as a secondary residence occupied by Bernard W. Chambers.

By 1940, 60-year old Isaiah Chambers still owned and farmed modern-day Tract 52, which was valued at $800. The household composition was much the same, consisting of his wife, Maggie E. (55), granddaughter Kathryn Smith (12), grandson Pearnel L. Smith (11), and joined by another grandson, Bernard W. Chambers (10). All three children attended school. Enumerated next door to the Chambers farm was their oldest son, Bernard W. Chambers (38), noted as divorced and as employed as a laborer at the cellophane plant in Fredericksburg (U. S. Census 1940). This evidence suggests that the elder Bernard W. Chambers was in residence in the house on the western side of modern-day Tract 52, and his son was being cared for by Maggie Chambers while Bernard worked in Fredericksburg. Presumably this arrangement had been in place for several years by this point in time.

In 1940, both houses on modern-day Tract 52 were indicated on the Caroline County road map as "farm units, in use." Isaiah Chambers definitely operated a fully operational farm as his primary occupation, but evidence suggests that Bernard Chambers farmed in a limited way because he worked for wages elsewhere.

Map 16. Caroline County road map showing the two homes on Chambers land, 1940.

On July 29, 1941, Isiah and Maggie E. Chambers conveyed their 15 acres to the United States government for $900, a price that reflects the multiple dwellings on the property, and the newness of the secondary house (CC DB 114:475).

Summary: Occupation on modern-day Tract 52 appears to have begun with renters, rather than owners. Having come out of slavery, Lee Chambers moved to Virginia in the 1870s. By 1880, he had married, started a family, and lived with them on a farm rented from the Gouldin family, very near the house known as Linden (see Tract 1). The Chambers family farmed this rented property until 1917 when their son, Isaiah purchased the 15 acres which would become modern-day Tract 52. Isaiah Chambers, along with his wife Maggie, raised their own family there and by the 1930s they were raising their grandchildren as well. Also in that decade, a secondary house was added to the western portion of the tract where the Chambers' oldest son, Bernard, lived while he worked in Fredericksburg and his son lived Isaiah and Maggie Chambers. After a long tenure of farming modern-day Tract 52, first as renters, then as owners, the Chambers family land was acquired by the United States government in 1941.

Tract 61 (Map Sheet 2, Quad F7)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the eastern portion of this tract, as well as a possible second structure in the western portion of the tract in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 61, which encompassed 156 acres. One large farm complex was noted on the eastern side of the tract, surrounded by cultivated fields on the aerial photo. The air photo also shows a possible secondary structure in the western portion of the tract, also surrounded by cultivated lands, which might represent an additional occupation or remote outbuilding.

The history of occupation on modern-day Tract 61 dates back reportedly to "about 1736" (Farmer 1936a). Based on the legal description of historically adjoining property (Linden, see Tract 1) and its associated plat, this structure was located on land owned by William Bucker, whose main residence was at the northeast end of Skinker's Neck on a farm called La Grange. La Grange was founded in the early eighteenth century, and the house on modern-day Tract 61 might have been one of the early structures associated with Bucker's lands. Other than this tentative association, the early history of occupation is vague, but the suggestion is that it was owned and used by the Buckner family into the 1830s.

According to historian Farmer (1936a), "The house was bought by Mr. Jack Gouldin more than a hundred years ago." That timing places John "Jack" Gouldin's purchase in 1836, which is in keeping with what is known about John Gouldin's land acquisitions. Gouldin began acquiring land in 1834 and continued until he had amassed a sizable estate of 2,086 acres. During his lifetime, John Gouldin owned a number of individually named farms which he operated together as a single enterprise, with wheat as his major crop (Beck 2012). Despite the Gouldin oral tradition of the property being purchased in the 1830s, other evidence suggests a somewhat later date. Gouldin neighbor,

Kate Buckner, noted in her diary for Wednesday, April 14, 1858 that she, "Painted on summer house nearly all day," and that the following day she was, "Painting the same; finished late in the afternoon; am glad enough to be through with that mighty job" (Buckner 1858). The summer house Buckner referred to is the house on modern-day Tract 61, which suggests that Gouldin acquired the property from the Buckners sometime after 1858. John Gouldin did not occupy the house on modern-day Tract 61. It might have been occupied by family members or employees (manager, overseer, etc.) of Gouldin's, or perhaps it was used as a seasonal dwelling.

In 1863, when John Gouldin died, his will referred to "the lands I bot [*sic*] of the Buckners called the Summer house tract" (CRHC file #2004-040-246-028), which is the same as modern-day Tract 61 and the house located there. From that will, John Gouldin's son, Thomas Gouldin, inherited this property from his father along with Linden (see Tract 1), Maywood (see Tract 33) and Chestnut Grove (see Tract 203). There is no evidence that Thomas Gouldin occupied the house on modern-day Tract 61. It might have been occupied by family members or employees (manager, overseer, etc.), or used in the fashion suggested by its name, as a "Summer House."

During the Civil War it was reported that, "There is a barn near the house that some of the Northern soldiers, after crossing the Rappahannock River, spent a few nights in. When these soldiers were found some of them surrendered but three or four of them were killed in this…Out in front of the house is a field that was used for camping ground by the soldiers during the War Between the States" (Farmer 1936a). Other than being occupied by soldiers, it is unclear if the "Summer House" was otherwise occupied during the War. No structures were mapped in the corresponding location on the 1864 Gilmer map. Although the occupants of the house during the 1870s and 1880s remain unknown, ownership remained in the Gouldin family and based on its survival, it must have been maintained at a minimum.

In the late nineteenth century, the "Summer House" passed to Thomas Gouldin's daughter, Edmonia, who married Thomas B. Toombs (also spelled Tombs) in 1895. Two years after her marriage, the property was conveyed to Edmonia Toombs (CC DB 75:270). In the 1900 census, the Toombs family was in residence on modern-day Tract 61 in the "Summer House." Thomas B. Toombs was a 40-year-old head of household, and a landowning farmer, although his property was mortgaged. His family consisted of wife, Edmonia (29), and sons Elmer (4) and Edward (1). By 1910, the size of the Toombs family had grown with the addition of son Ashby (1). The Toombses were helped out by 14-year-old Nancy Minor, who was described as a mulatto, who lived with the family (U. S. Census 1910). In 1918, Thomas B. Toombs died, leaving his wife Edmonia a widow at the "Summer House" on modern-day Tract 61 (CRHC file #2004-040-367-018). In 1920, Edmonia had stayed on at the "Summer House" where her son Edward (21) was now head of household and Ashby (11) still lived at home (U. S. Census 1920). By 1930, Edmonia still lived on modern-day Tract 61 in the "Summer House," but all her birth children had left home. Instead, the 53-year-old widow was raising three adopted children Keith (10), Viola (9) and Eugene (8) Toombs (U. S Census 1930).

In 1936, the house on modern-day Tract 61 was recorded by the Historical Inventory Project in Virginia (Farmer 1936a). At that time, it was dubbed the "Home of Mrs. Edmonia Toombs." Apparently the moniker of the "Summer House" did not stay with the habitation over time. Historian Farmer (1936a) described Mrs. Toombs' home as follows:

> It is of the one and one-half story structure and has a basement. There are four rooms in the basement, new floors have been put in here but the original ones are in the rest of the house.
>
> The doors here are of the two panel type and have large iron locks, the brass knobs are found on several of them but the others have been replaced with the common type knobs. The common type hinges are found here also. All of the timbers used in the construction of this house were hewn by hand.
>
> There are two one-story porches here, one on the north and one on the south. These porches are very plain and do not have columns. There are two dormer windows on the south side of the house. There are three entrances to the cellar, one inner entrance and two outer. This house is as it originally was, it has never been remodeled. New weatherboarding has been put on and new floors put in the cellar but nothing has been done to change the original plan of the house.

Illustration 4. Front and side views of the Home of Mrs. Edmonia Toombs, formerly known as the Summer House, in 1936 (Farmer 1936a).

Farmer (1936a) stressed that, "The house is as its [*sic*] originally was" and that since its original purchase, "It has been in the Gouldin family since that time. Today it is the possession of Mrs. Edmonia Toombs…a descendant of Mr. Jack Gouldin." This again indicates the on-going care, maintenance and use of this house by its long-term owners, the Gouldin family.

The following year, the "Home of Mrs. Edmonia Toombs" was captured on an air photo. The main farm complex surrounded by cultivated fields is clearly visible in the eastern portion of the tract. A smaller structure, also surrounded by cultivation, is visible

on the western portion of the tract. Considering that Mrs. Edmonia Toombs was a widow on the farm, evidence suggests that her nephew, Warren Goulding, was possibly in residence to assist on the farm at this time.

Map 17. Tract 61 (left); the main farm and secondary structure on Tract 61, known as the "Home of Mrs. Edmonia Toombs," and the "Summer House (right), in 1937.

From 1938 to 1940, other family members lived with Mrs. Edmonia Toombs. Informant Nancy Goulding Young (2007) recalled, "I lived with a relative—my parents lived with a relative, a Mrs. Tooms, Monee (phonetic) Tooms, and what I remember about her house was just that she had an English basement with steps." Young (2007) also reported that another family member recalled, "she remembers the long, narrow dining room…She remembers my father sleeping in a bed. He was a bachelor; he married really late; he was 53 when I was born. And she remembers that he had a bedroom and you would enter it through the back stairway. And it was a big feather bed." (See 1936 photo). This recollection suggests that nephew Warren Hall Goulding had been living with Edmonia Toombs for a period of time in the 1930s. Young continued her own recollections, "It had a porch, that I remember, and I think it had round columns on the porch. I know that it had a back stair, I do know that. And it was a frame house. I have a picture of part of the house with my parents holding me."

Illustration 5. Left to right: Warren Hall Goulding, Nancy Goulding and Helen Lee Bullock Goulding, standing in front of the home of Mrs. Edmonia Toombs, 1939.
Photo Courtesy of Nancy Goulding Young

In 1940, the occupants of modern-day Tract 61 were listed as Warren H. Goulding, the 56-year old head of household, his wife, Helen B. (33) and their 2-year-old daughter Nacy [*sic*] L. (U. S. Census 1940). Mrs. Edmonia Toombs was not enumerated in the household despite Nancy Young's recollection of her presence. The Goulding family was listed as renters, and Warren Goulding was listed as a farmer.

Also in 1940, the structure that is the Home of Mrs. Edmonia Toombs/the Summer House is depicted on the Caroline County road map as a "farm unit, in use."

Map 18. Portion of the 1940 road map of Caroline County showing the "farm unit, in use" north of Gouldin on modern-day Tract 61.

On August 6, 1941, Edmonia P. Toombs, widow, conveyed her home, formerly known as the Summer House, to the United States government for $2,750. The property contained 156 acres, and is modern-day Tract 61 (CC DB 115:56).

Summary: Occupation on modern-day Tract 61 reportedly originated in 1736 with the construction of a small home. Evidence indicates that it was part of the lands owned by William Buckner, whose main residence was at the end of Skinker's Neck on a farm called La Grange. To the Buckers, this structure was known as the Summer House. In *ca.* 1836, Gouldin family history suggested that Buckner sold the property to John Gouldin. However, evidence from Kate Bucker's diary suggests that Gouldin did not acquire the Summer House until after 1858. Once purchase, it became one of many farms in Gouldin's sizable estate where wheat was cultivated as his cash crop. At his death in 1863, his son Thomas Gouldin inherited the Summer House along with other properties. During the first two generations of Gouldin ownership, it is unclear if the Summer House was used as a seasonal residence, housed family, employees or tenants. During the Civil War, Confederate troops camped on the property, and Northern soldiers even took refuge in an outbuilding. The Summer House remained in Gouldin hands, passing on to a third generation in 1897, to Thomas's daughter Edmonia Gouldin Toombs, two years after her marriage. The Toombs family lived on modern-day Tract 61, farmed it, and raised their family there until Thomas Toombs' death in 1918. Widow Edmonia stayed on in the 1920s with her children until they were grown, and then a second set of adopted children in the early 1930s after her own had left home. By the late 1930s, Edmonia Toombs' nephew, Warren Goulding, came to live with her and help on the farm. After his marriage, he continued to live in the home of Mrs. Edmonia Toombs as a renter with his

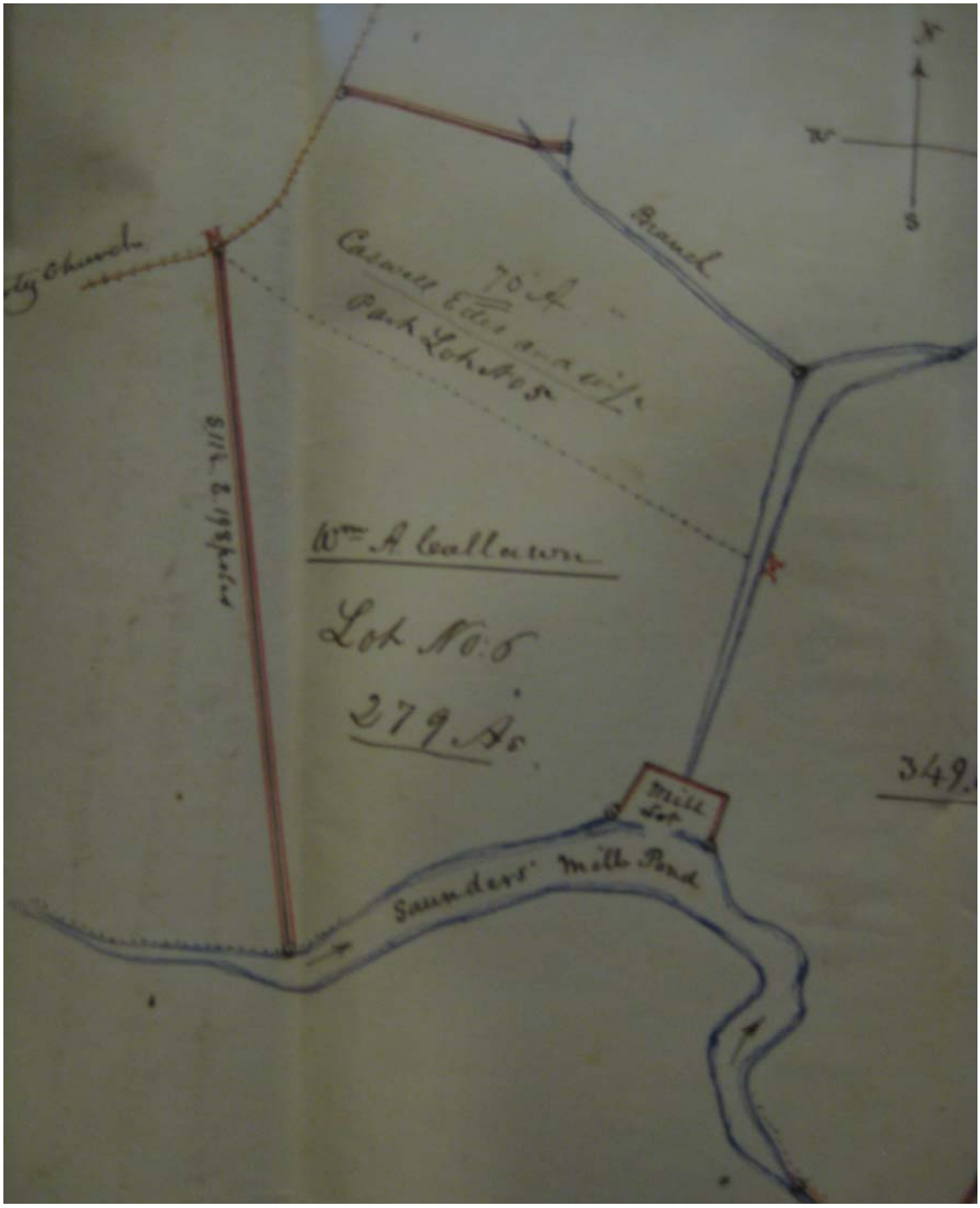
new wife and young daughter until the property was acquired in 1941 by the United States government, after four generations of Gouldin ownership and use.

Tract 100 (Map Sheet 2, Quad A10)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the western-most portion of this tract in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 100, which encompassed 129 acres. Only one occupation was noted within the tract on the aerial photo.

The documentation of occupation on Tract 100 began in 1817. In that year, the land on which the occupied portion of modern-day Tract 100 is situated was purchased as part of a 585-acre tract by Charles C. Taliaferro from Reuben Tankersley of Richmond. Charles and his wife built a house called "Cherry Grove," which sat on a bluff on the east bank of Golden Vale Creek (Craig 1996). Because Tankersley was a resident of Richmond, he would not have been in occupation on the land. Taliaferro's Cherry Grove was not located within the modern-day Tract 100. Charles Taliaferro resided at Cherry Grove until his death, at which point his wife inherited the now 485-acre Cherry Grove plantation, including the location of modern-day Tract 100. In 1846, Susannah Taliaferro died and the Cherry Grove estate was distributed to his heirs (Craig 1996).

At some point between 1846 and 1855, William Callawn acquired 349 acres of the Cherry Grove plantation, including the location of modern-day Tract 100. Upon William Callawn's own death in 1855, his estate consisted of "1828 Acres, to wit, 1479 Acres in one body & 349 acres, detached (being Taliaferro's former tracts)" (Callawn vs. Callawn 1857, CRHC unindexed file of Caroline County Chancery Court Ended Papers). These lands were distributed to Callawn's heirs in September of 1855. One of them was Caswell Eads, who had married Callawn's daughter, Lucy. Caswell Eads and wife received two tracts of land, consisting of Lot No. 5 (261 acres) and Part Lot No. 5 (70 acres), the latter being out of the former Taliaferro land. Eads was also allotted four slaves (Callawn vs. Callawn 1857). Eads and his wife were residents of Sumpter County, Alabama and almost immediately sold the land they inherited. On October 15, 1855, Casewell and Lucy Eads sold 70 acres to William A. Collawn for $575. The property was described as, "Beginning at the Gate that leads out of the said William A. Callawn's plantation which he is now residing into the main County road from Liberty meeting House to Rappahannock Academy….It being that Lot or parcel of land allotted to the said Eades & wife by the courts who divided and allotted the lands of the late William Callawn" (CC DB 49:199). William A. Callawn's purchase of this 70-acre tract gave him ownership of the entire 349 acres north of Saunder's Mill Pond (modern day Travis Lake), with his residence being to the east of modern-day Tract 100.



Map 19. Portion of the 1855 plat map of the William Callawn Estate, showing the 70 acre tract allotted to Caswell Eades and wife (top), which includes the occupied portion of modern-day Tract 100.

There is a break in the chain of title for Tract 100 from William A. Callawn's ownership in 1855 until 1922. In March and November of that year, Robert A. Bullock acquired two separate parcels of land (CC DB 91:445, 506). Two years later, Bullock added a final tract of land (CC DB 94:72). Together, they made up modern-day Tract

100. According to Bullock's daughter, informant Nancy Napier, this property was family land. She reported that her father had been raised, "In this house. And Uncle Tom and I'm sure Grandma, my dad's mom, probably grew up in that house" (Napier 2007:17). It would appear that the generation prior to Robert A. Bullock established the first occupation on modern-day Tract 100.

Illustration 6. Robert Allen Bullock, Sr. Photo courtesy of Nancy Bullock Napier.

Nancy Napier lived at the house on modern-day Tract 100 as a young child, immediately prior to acquisition. She was able to provide a number of useful memories about the farm. Living there, the family considered themselves most closely associated with the community of "Rappahannock Academy, they had a post office in the store. And then I think probably the next closest would have been Port Royal. See, Port Royal was kind of a port where a lot of the products like wheat, oats, corn if we sold it, would be shipped down the river," (Napier 2007:8). The Bullock family attended Bethesda Baptist Church [see Tract 326] (Napier 2007:18). The family farmed, gardened and had an orchard. Napier recalled, "we dried apples or dried peaches. Well, you cut them up and what we did, our kitchen was built onto the bigger portion of the house, it was built on. But you could go out the window and the roof was just there. And you would put them on sheets of aluminum or whatever and the sun dried them. And then you end up making pies in the middle of winter. And we had huge shade trees and huge rooms and huge tall ceilings. So the air flowed pretty good through the house without – but the kitchen itself was one story, and that was a hot place to be in the summertime (Napier 2007:35-36).

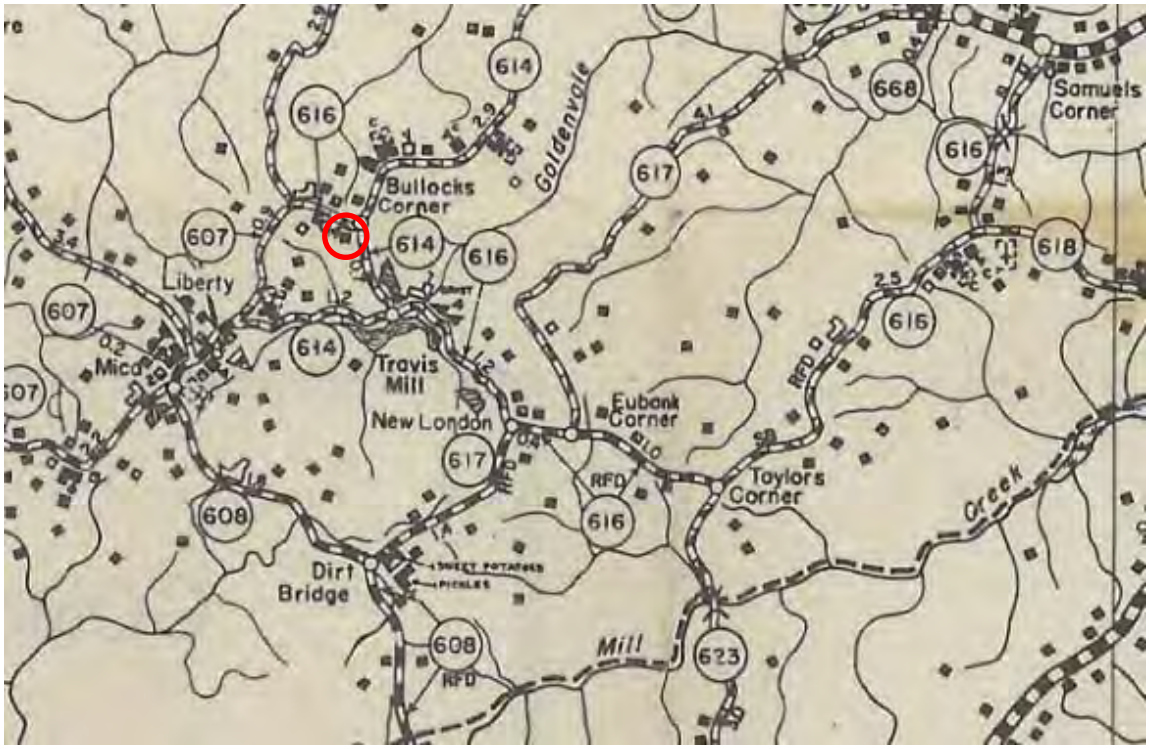
In addition to his farming duties, Bullock also operated a mobile sawmill. Napier remembered, "my dad had a sawmill also when he was at A.P. Hill. And he cut the logs at the sawmill that went into Dr. Travis' Lodge [*sic*]. The Lodge wasn't his home, but it

was his land, and it's right there at Travis Lake [see Tract 110]. As the youngest of the 11 Bullock children, Napier remembered her father fondly. "I remember walking with my dad to the spring to get the cans of milk or whatever that needed to be kept cold. I was his little sunshine. He used to say, 'You are my sunshine'…And I had to reach way up because he was tall and hold on to his finger. That was my job, to hold on to him instead of him holding on to me." (Napier 2007:35).

In 1937, modern-day Tract 100 appeared on the aerial photographs with a house and barn at the western end of the tract, fronting onto Route 616. Land was in cultivation around the farmstead, and also at the northeastern portion of the property. The central part of the farm was left in timber, which Bullock used in his sawmill business. Robert A. Bullock also owned another 50 acres of timber to the north of modern day Tract 100, but it was not occupied.

Map 20. Tract 100 (left), and the Robert A. Bullock farm (right).

In 1940, the Bullock farm is shown on the road map as an active farm. By that point, the area had come to be known as "Bullock's Corner," presumably for the generations of the Bullock family who lived at the intersection of Routes 616 and 614. Robert A. Bullock's off-farm work with his mobile saw mill would have made him a business man well known in the community. Bullock retained ownership of his property until acquisition in 1941.



Map 21. Portion of the 1940 road map of Caroline County showing the building on modern-day Tract 100 as "farm unit, in use." The area was known as "Bullocks Corner."

Illustration 7. Last family photograph at the Bullock house, *ca.* 1941 on modern-day Tract 100. Standing, left to right: Ruby, Blanche, and Elizabeth. Crouching: Wellford (or possibly Andrew). Photo courtesy of Nancy Bullock Napier.

At acquisition in 1941, Napier remembered the reaction of those in her community who lost their land, "Oh, everybody was devastated. You know, your neighbors, the people you went to church with, they've know them ever since they were small, and you went to school with them. And when you're a farmer, you know what your land is like, you know what you can raise on it," (Napier 2007:15). The United States Army bought 129 acres from Robert A. and Julia E. Bullock's for $2,600.00 on November 14, 1941 (CC DB 116:189).

In 1973, local historian Ralph E. Fall recorded the "Old Bullock Place," reportedly also called "Cottage Home." It was assigned VDHR resource #016-0075. Fall noted that, "It was demolished and the property is contained within what is A. P. Hill." The site is situated within what is now the Travis Lake Historic District (VDHR #016-5009), although it is not considered a contributing element of the district.

Summary: In 1817, the location of modern-day Tract 100 was owned by Richard Tankersly of Richmond, who sold it to Charles Talliaferro that year as part of a 585-acre tract. On this land, Talliaferro built a plantation called "Cherry Grove," an occupation located outside modern-day Tract 100. At some point prior to 1855, William Callawn had acquired 349 acres of the Cherry Grove property, which was distributed as part of his estate in that year. The occupied portion of Tract 100 was situated within a 70-acre tract inherited from Callawn by his son-in-law and daughter, Caswell and Lucy Eads, residents of Alabama. They immediately sold the property to William A. Callawn, who was in residence on an adjoining tract. At some point between 1855 and 1922, the occupied portion of modern-day Tract 100 was acquired by the Bullock family, who appear to be the first residents. Prior to this time, the property was part of tracts of land on which the owners had established residences elsewhere. In 1922, Robert A. Bullock acquired the occupied portion of modern-day Tract 100, which by then was an established house where he had grown up. Bullock in turn raised his own family of 11 children there with his wife Julia. Bullock farmed and operated a mobile sawmill. By 1940, the intersection of Route 616 and 614 had become known as Bullock's Corner, the area now his namesake. Bullock retained ownership of his property until acquisition.

Tract 106 (Map Sheet 2, Quad A9)

Occupation History: Inspection of the 1937 aerial photo shows a single structure in the southern portion of this tract in Caroline County. In 1941, when the government acquired the property, the structure was situated within Tract 106, which encompassed three acres. This structure was Bethlehem Baptist Church.

The history of Bethlehem Baptist Church on modern-day Tract 106 begins with the lands of Richard and Catherine Buckner, who owned the land on which modern-day Tract 106 was located. In the 1850s, Buckner owned hundreds of acres of land worked by his labor force of 44 slaves (U. S. Census 1850, slave schedule). At that time, their son, Richard H. W. Buckner, a 39-year-old Baptist minister, lived with them along with two of their daughters (U. S. Census 1850). On May 19, 1853, Richard and Catherine Buckner conveyed to their son, Richard H. W. Buckner, the tract on which the family

was living for $1,649, which also contained the location of modern-day Tract 106 (CC DB 49:7). At this time, modern-day Tract 106 was a small portion of a much larger property and was not occupied. In 1860, Richard H. W. Buckner (49) still lived on the same property along with his father, Richard Buckner (84), and wife Maria S. Buckner (28) (U. S. Census 1860), but modern-day Tract 106 remained undeveloped.

In 1865, immediately after the end of the Civil War and at the beginning of emancipation, Bethlehem Baptist Church came into being. As historian Wingfield (1924:168) noted about enslaved African-Americans, "Under slavery many of them attended the churches of their masters, and after the war many continued to do so. However, the new status made a continuation of the pre-war custom undesirable." In 1865, Rev. Richard Henry Washington Buckner donated one acre of land for a church, upon which a brush arbor was built for its first structure (Wingfield 1924:168). The first service was celebrated there in June 1865 where Buckner officiated until a permanent minister could be selected. Evidence suggests that the gift of land was an informal one, as no deed was located corresponding to that date. The church was organized by Burrell Toler, Elmo Taylor, Charles Barnett, E. J. Roy and fifteen others, with Rev. J. W. Pendleton serving as the first minister (Wingfield 1924:168). Once winter came, the brush arbor was replaced by a log cabin to house the newly formed congregation.

In the 1880s, there were 416 members of the congregation (Anonymous 1995). Between January 1, 1890 and September 22, 1893, the Trustees of Bethlehem Baptist Church formalized their arrangement with R. H. W. Buckner buy purchasing a total of three acres from him for the church for a total of $30, being the same as modern-day Tract 106 (CC DB 54:15; 64:283). In 1898, membership of the church had grown to 316 members and to 361 members by 1900 (Anonymous 1995). In 1910, the church trustees borrowed $800 to build a new church building. In the decades that followed, the membership of Bethlehem Baptist Church worked together to build a permanent structure, to minister to the needs to the congregation, and to do missionary and educational work.

In May 1921, the church was insured for $3,600, and was described as having a metal roof, brick chimney flues and an organ (Anonymous 1995). By 1924, the church had expanded to four buildings with gas lights fueled by carbolic mixture housed in one of the outbuildings. The buildings were valued at $5,000 and membership numbered nearly three hundred. The grounds were surrounded by an iron fence (Wingfield 1924:168). By 1933, the church was described white frame building that had green shutters, a slate roof, a steeple with a bell, stained glass windows and double doors. Inside, there was red carpet between the three sets of pews, and it was heated with two potbelly stoves. The cemetery was to the rear of the church (Anonymous 1995).

Many of the African-American informants who formerly resided in the Mica area had recollections of Bethlehem Baptist Church:

Cleopatra Kay Coleman (2007): In that day and time, the schools for Negroes were, for the most part, started by churches, and most of the churches here in Caroline County for

blacks and whites were Baptist, of the Baptist denomination. So most of the one-room schools that were built for colored children were built by the black Baptist church. And our church was the Bethlehem Baptist church, and so the school, of course, built by that church was Bethlehem School.

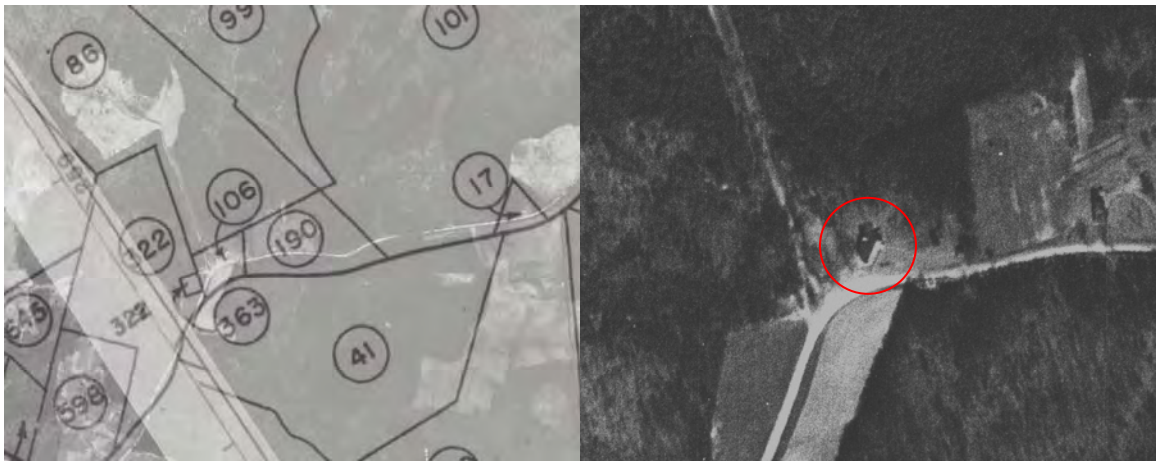
Marie Gray Thornton (2007): Used to go to meetings, Baptist meetings, had the homecomings, had all-day meetings…We used to go to Bethlehem.

William Taylor (2007): So then my father had a truck, and he used to go by one Sunday a month, we went…four Sundays we went—he loaded—go through the community, anywhere that there was Bethlehem members, they load on the truck if they didn't have transportation, and he would take us down there and we'd have our service on fourth Sunday. Then during the month, we would go to the church which was closest to you.

Lois Fortune Garnett (2007): I think everybody that was in the neighborhood attended our church, and then we would go to Bethlehem, which was [William] Taylor's church, that was about 10, 15 miles from us, on Fourth Sunday.

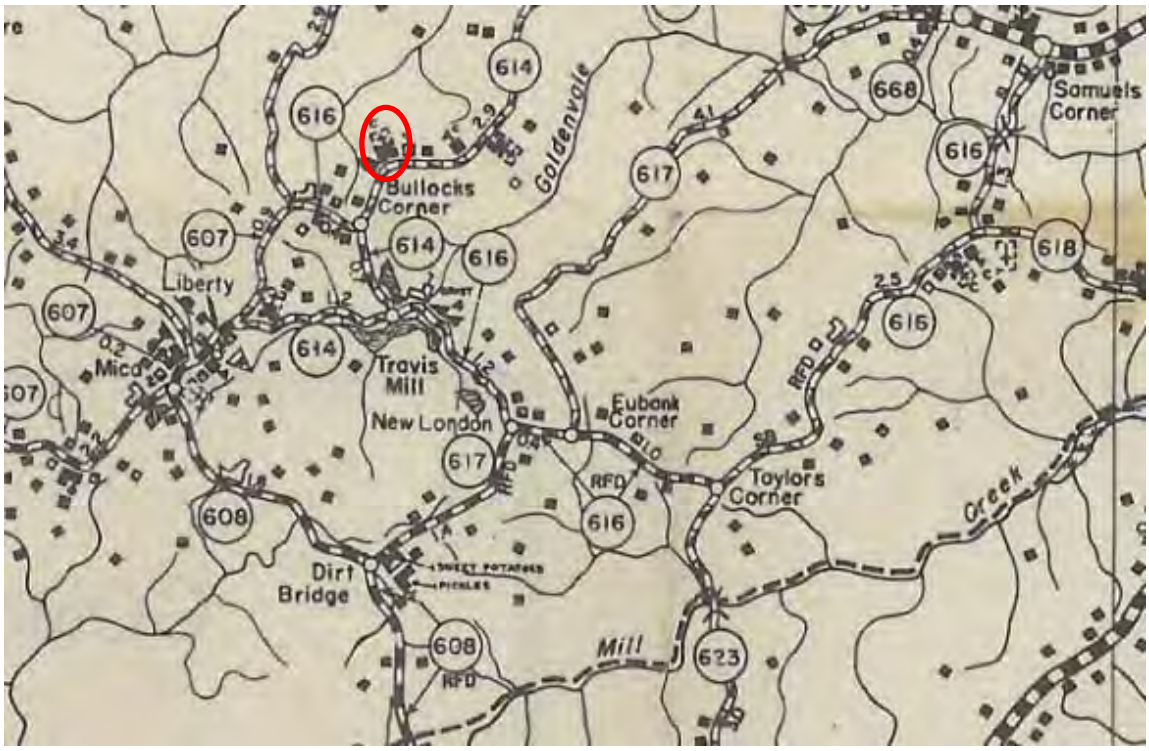
Gloria Beatrice Reynolds (Reynolds and Reynolds 2007): We were in A.P. Hill, so it was Bethlehem [church]…Well, we knew we had to—there were things we weren't allowed to do; things we were allowed to do, and I know we didn't—weren't allowed to do any kind of work on Sunday, go to church. And I guess, come home, we always had a big Sunday dinner, and then I guess we would sit around and play games and talk and sing. All of us always loved to sing. We had to go to Sunday school, BTU, and we joined the choir and the young people activities, and so forth and so on.

In 1937, the grounds of Bethlehem Baptist Church were captured on an aerial photograph. The white frame church building with its steeple fronting on Route 614 is clearly visible.



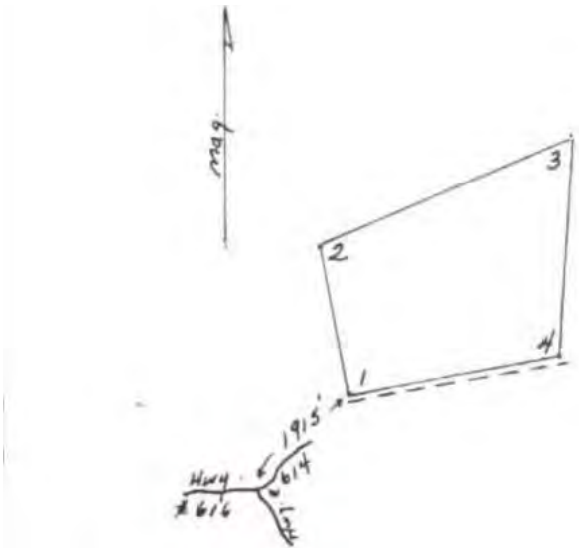
Map 22. Modern-day Tract 106 (left) and Bethlehem Baptist Church (right) in 1937.

In 1940, Bethlehem Baptist Church was noted on the Caroline County Road map as a "colored" church. The cemetery was indicated behind the church.



Map 23. 1940 Caroline County road map showing Bethlehem Baptist Church.

On May 20, 1941, the United States government acquired the three acres that contained Bethlehem Baptist Church from Trustees Henry Brown, Eugene Scott, Silas Ellis and Harvey Ferguson for $3,850 (CC DB 114:399-402).



Map 24. Plat of modern-day Tract 106 in 1941 (CC DB 114:403).

Despite acquisition of the property, the congregation of Bethlehem Baptist opted to stay together and find a new church site, rather than disband. As explained by member William Taylor (2007), "Well, see, what happened with us, we continued the only church

black or white that moved out of A.P. Hill and continued to be a church…Bethlehem Baptist Church, still a church, only one black or white." Burials from Bethlehem Baptist Church's cemetery were exhumed and moved to Mount Lawn cemetery in Woodford, Caroline County. As informant Gladys Rich Ferguson (2007) recalled, "Bethlehem had a cemetery, Mt. Olive cemetery, Baylorville cemetery, and Mt. Dew cemetery. They were the four that had cemeteries in there. And the people from all cemeteries when they died, they moved them there [to Mount Lawn].

A post-acquisition aerial photograph of Bethlehem Baptist Church on Tract 106 clearly shows the areas where graves were exhumed, marked by a white, pock-marked appearance to the rear of the church.

Map 25. Area of exhumed cemetery to the rear of Bethlehem Baptist Church in 1943.

Summary: The history of Bethlehem Baptist Church is as one of the oldest African-American churches within FAPH lands. Modern-day Tract 106 was situated within the lands of Richard Buckner in the 1850s. Buckner owned many acres and a large slave labor force. In 1853, Buckner sold the property where the family was living to his son, Richard H. W. Buckner, who was also a Baptist minister. This land also included modern-day Tract 106, which had not yet been developed or occupied. In 1865 at the close of the Civil War, Buckner informally donated an acre of land for a "colored" church, which was initially housed in a brush arbor, then a log cabin. Between 1890 and

1893, Trustees of Bethlehem Baptist Church formalized their land ownership by purchasing three acres from Richard H. W. Buckner. Over the years, the congregation grew and expanded its efforts to a variety of community, educational and missionary efforts. In 1910, trustees borrowed money to build a new church building. The resulting structure was a classic white frame building with steeple, stained glass and gas lights. Bethlehem Baptist Church continued to be a hub for the African-American community through the early twentieth century, being a destination for church-goers further afield every forth Sunday. In 1941 when the U. S. government acquired the three acres as Tract 106, the church did not disband. Instead, the congregation remained together and moved to a different location. The burials in the cemetery behind Bethlehem Baptist Church were exhumed and moved to Mount Lawn cemetery in Woodford.

Tract 110 (Map Sheet 1, Quad J10)

Occupation History: Inspection of the 1937 aerial photo shows occupations in four separate locales on Tract 110. Active farmsteads are visible in the western and southern portions of the tract, whereas the two structures along the north shore of Lake Travis are much smaller. A forth small occupation/farmstead is barely visible in the southwestern portion of the tract. Further inspection of the 1943 aerial photo shows the addition of one more occupation, with the construction of The Lodge on the north shore of Lake Travis in 1939.

As with much of the land that was acquired by the United States government for Camp A. P. Hill, the early history of modern-day Tract 110 is incomplete and has been drawn together from a number of primary and secondary sources. The earliest documented use and occupation of the land where modern-day Travis Lake is located, dates to the 1730s. According to previous researchers, "Travis Lake may be descended from a colonial mill pond associated with a mill owned by Benjamin Robinson" (Winter and Pezzoni 1994:17). Robinson's proposed mill would have been situated at a location on the boundary between modern-day Tracts 155 and 110, which was upstream from the later Saunders Mill, which in turn became Travis Lake (Pezzoni 1995). If that was the case, Robinson could possibly have been the earliest known owner and occupant of modern-day Tract 110. However, primary documentation to confirm this theory has not been located and no remnant of his activities have been identified on modern-day Tract 110.

Modern-day Tract 110 encompasses a total of 621 acres, which historically were at least three separate tracts that had separate land histories. Prior to 1790, the 600 acres south of modern-day Travis Lake was owned by a Mr. Taylor. There is no evidence to suggest that Mr. Taylor occupied that land. Mr. Taylor in turn sold the land to Absalom Bradley, who had immigrated to Virginia from England. In *ca.* 1790, Bradley built a house that was known then as Poplar Grove, because of its location in a grove of poplar trees. The home was re-named at some point later as Forest Hill (Farmer 1937c). Forest Hill is the occupation noted in the southern portion of modern-day Tract 110, and was the initial occupation at that location within modern-day Tract 110.

Absalom Bradley was a builder, who not only built his own house at Poplar Grove/Forest Hill, but he also built nearby Liberty Church in 1796. Although no photos of Poplar Grove/Forest Hill survive, a detailed description was recorded by the Historical Inventory Project in Virginia.

> This is one and one-half story, rectangular frame building. It has a gabled roof covered with metal and there are three large brick chimneys. One chimney is on the north side of the house the other two are on the south side. The weatherboarding is of pine and is plain.
>
> There are ten windows here. The panes are 8 x 10 and they are the six pane sashes. There are shutters to several of the windows, the others were taken off a few years ago. There is only one porch here and that is on the east side, which is the front of the house.
>
> There are five rooms in this house; three on the first floor and two on the second floor. The ceiling height is approximately 7½. The stairway is of the enclosed type and is perfectly plain. The walls are plastered but have not been papered or painted.
>
> The doors are of pine and all of them are hand made and not paneled. HL hinges are used on these doors and the modern type of locks (Farmer 1937c).

From 1817 to October 15, 1855, the history of the northern portion of Tract 110 is identical to Tract 100. At that time, William A. Callawn owned 628 acres directly north of what was then called Saunder's Mill Pond (present day Travis Lake). This property encompasses most of the portion of modern-day Tract 110 situated north of Travis Lake. However, William A. Callawn's property did not include the "Mill Lot," which at the time was owned by Hay Saunders. In 1850, Hay Saunders owned land valued at $3,438. He was a farmer and had a family of four along with his wife Lavinia (1850 U. S. Census). Saunders owned eleven slaves ranging in age from 3 to 35 years (1850 U. S. Census, slave schedule). Census records suggest that the mill was being operated by William Skinner. Skinner was enumerated between the Saunders and Bradley households, and his occupation was noted as Miller (1850 Census). By 1850, Absalom Bradley's son, Thornton Hezekiah Bradley, a widower, had inherited Forest Hill and lived there with his widowed mother, his five children from his first wife (Frances Kidd Bradley) and an apparent caretaker for his young children (1850 U. S. Census). Interestingly, Thornton Bradley's household also included the 10-year-old white female named Lavinia A. Saunders. Her relationship to the Bradley and neighboring Saunders families remains unclear. Thornton Bradley also owned 15 slaves at Forest Hill (1850 U. S. Census, slave schedule).

Although it has been suggested that Saunders's antebellum mill followed on from Robinson's colonial mill, Saunders appears to have moved his dam upstream where he established what later became upper Travis Lake. On the 1864 Gilmer map, "Sanders"

[Saunders] mill and pond are clearly marked. Forest Hill was depicted in 1864 on the Gilmer map as well, but it is not named, nor is there a family name associated.

Map 26. The 1864 Gilmer map of Caroline County showing Sanders [Saunder's] mill pond and the unlabeled Forest Hill.

Despite its lack of identification on the 1864 map, the house was definitely occupied. Miss Gustie (Augusta) Bradley lived in the house during the Civil War with her mother, Martha T. Bradley, and her remembrances of the house during that time were recorded.

> Tradition has it that during the War Between [the] States there were three Federal Guards staioned [sic] at this house to protect it and the family living there. It has also been said that there was an encampment of soldiers called the "Louisiana Tigers" not far from this house.
>
> During this war, Mrs. Bradley, the occupant of the house, was visited by Federal soldiers. They came in and asked if she had any children or relatives in the War. She told them that she had two step-sons and they conversed with each other for a long time. When they were leaving they saw a fresh pile of dirt, under which was hidden the pictures of the two step-sons. They dug these pictures up and took them to the owner when asked for them (Farmer 1937c).

Mrs. Martha T. Bradley's two step sons were William H. Bradley and Park B. Bradley (1850 U. S. Census). Although it is unclear which unit William served with, Park was a

private in Thornton's Company, Virginia Light Artillery, originally called the Caroline Light Artillery (National Park Service Civil War Soldiers and Sailors System, hereafter cited as NPS CWSS). The unit fought in South Carolina, Georgia, Florida and Virginia, most notably in the defense of Petersburg and as part of the Appomattox Campaign (NPS CWSS). Both young men survived the war.

Meanwhile, at modern-day Tract 110, Hay Saunders retained ownership of the mill separate from the lands to the north until his death in 1868 (CRHC file 2004-040-324-049). By the end of the 1860s, the Callawn family owned the land to the north of Saunder's mill, and the mill itself had reportedly fallen into disuse after the Civil War (Pezzoni 1995).

In 1872, a merchant from Peekskill, New York arrived in Caroline County. His name was Francis Marion Travis (CC WB 38:273). Three years after his arrival, F. M. Travis married William Callawn's granddaughter, Bettie B. Collawn, daughter of J. W. and Judith Collawn (CRCH file 2004-040-061-083).

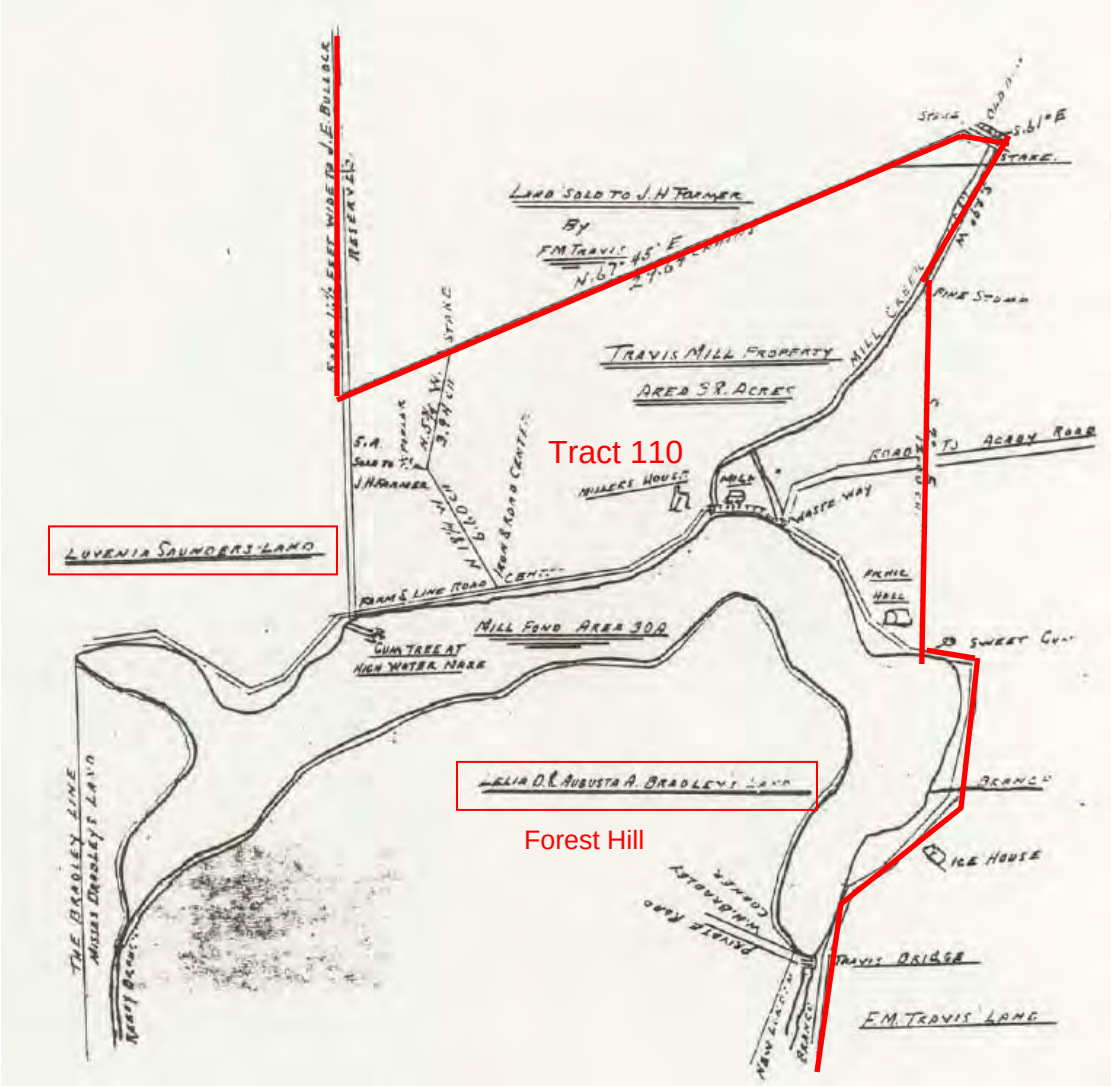
In the Bradley household at Forest Hill, Thornton H. Bradley remained as its head along with his second wife and their three adult children, Delia D., Augusta A., and James I. Bradley (U. S. Census 1880). Thornton Bradley still farmed his land at Forest Hill. In 1880, former member of the Bradley household, Lavinia A. Saunders, is now living with her own mother, Lavinia Saunders and the elder Lavinia's two grandchildren, Molly and James Bullock (U. S. Census 1880). The Lavinia Saunders household constitutes another farmstead in the northwest portion of modern-day Tract 110, on the north side of Travis Lake. In 1889, Martha Bradley passed away.

At some point between F. M. Travis' arrival and 1893, he had acquired the lands that included modern-day Tract 110 at the mill pond and the lands north of it, most probably through his marriage into the Collawn family. During his lifetime, F. M. Travis spent 25 years as the Caroline County Surveyor, "was a prominent merchant of New London" and was the Grand Master of his local Kilwinning Cross Masonic Lodge at Bowling Green (CC WB 38:273; Pezzoni 1995). Together, F. M. and Bettie had seven children, consisting of four girls and three boys. Notable among the children was daughter Edna Earl, who married James Tizzard Cosby. Together they had a son named Travis Cosby (CRHC file 2004-040-091-030).

Elsewhere on modern-day Tract 110, at Forest Hill, Thornton H. Bradley continued to live in the house in 1900. Now aged 88, Thornton Bradley was still listed as a farmer. His son, James I. Bradley, had become the head of the household, where his sisters Lelia D. and Gusta A. also lived. James' occupation was that of Salesman (1900 U. S. Census). Also in 1900, Lavinia A. Saunders had become the head of her own household and she was listed as a farmer. Her household consisted of her niece, 38-year old Molly/Mollie E. Bullock, and a 26-year old servant from New York named Charlie Smith, who worked for Lavinia as a farm hand (1900 U. S. Census).

In 1904, Thornton Bradley passed away at the age of 92, leaving his Forest Hill house and lands to his children. Son James I. Bradley died in 1915, leaving his sisters Augusta A. and Lelia D. Bradley as the heirs to Forest Hill (CRHC file #2004-040-364-003).

In modern-day Tract 110 north of Travis Lake in 1920, F. M. Travis re-drew an 1893 plat of his property, which also indicated the owners of adjoining lands (CC DB 89:232). For the first time, the location of both the mill and the miller's house are indicated on a map (although one had been implied on the mill lot previously). These mapped locations coincide with the structures visible on the north side of Lake Travis on the 1937 aerial photograph. Travis owned the land to the east of Travis Lake as well. Other features of his property include a "Picnic Hall" overlooking the lake, an ice house to the southeast, and Travis Bridge crossing over the branch at the southeast end of Travis Lake. Although the plat notes that Travis sold some of his land to J. H. Farmer by 1893, none of the portions indicated on the map correspond to occupied portions of modern-day Tract 110. This map also indicates that the property to the west of Travis Lake was owned by Luvenia Saunders, and that to the south was owned by Lelia D. and Augusta A. Bradley, which was Forest Hill. These areas correspond to other occupations in modern-day Tract 110. Luvenia Saunders does not appear in any other U. S. Census records from 1920 onward, and her niece Molly is thereafter enumerated in a different household, that of her other aunt, Virginia A. Sanders (U. S. Census 1920). F. M. Travis retained ownership of his land and operated his grist and sawmill until his death in 1925.



Map 27. Detail of an 1893 plat (redrawn in 1920) showing portion of modern-day Tract 110 (CC DB 89:232).

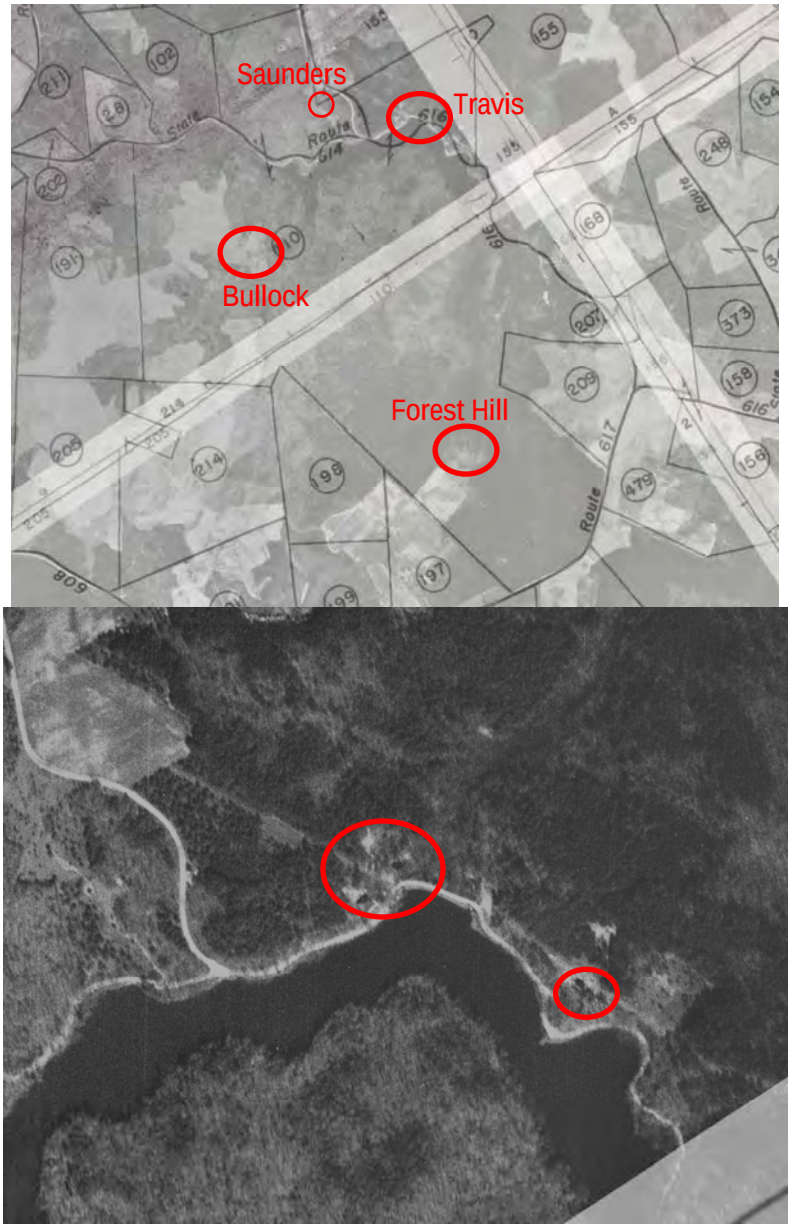
In his will, which was probated in 1925, F. M. Travis gave his grandson, "Travis Cosby Edna's son…the house tract of 3¼ acres less ½ acre for grave yard…and 52¼ acres across the road taking in all the land…extending 10 feet north of the bridge on the south side of the mill pond and to the 'Travis Pond Club.' Total 55 ½ acres." F. M. Travis's wife, Bettie B. Travis, had a life interest in the property. Also, F. M. Travis stipulated that if his grandson should, "do anything to bring reproach or disgrace on my family, he shall receive three hundred dollars instead of the 55 ½ acres of land" (CC WB 38:273). This parcel of land encompasses the occupation on the north shore of Travis Lake.

Travis Cosby retained ownership of the land until 1929. Although he retained the Travis family home on the north shore of Lake Travis, he sold the mill pond and the adjacent property to the east to Harold V. Dickinson of New York, who in turn transferred the ownership to the Dickinson Land Company (CC DB 99:45, 146, 182).

Pezzoni (1995) speculated, “The land company may have intended to resell the property soon after purchase, but the stock market crash of 1929 and the ensuing depression intervened.” Pezzoni also suggested that the Dickinson Land Company might have built improvements on the property during their ownership. However, as F. M. Travis’s will and the 1920 plat of the property make clear, F. M. Travis’s house was already in existence. Pezzoni also suggested that elements of the “miller’s house” were incorporated into the present-day structures, which arguably is the case.

At Forest Hill at this time, the Bradley sisters, Augusta and Lelia, continued to live together at the farm. In 1936, Lelia died. The next year, Augusta was living in Bowling Green when Selma Farmer interviewed her about Forest Hill (Farmer 1937c). It is unclear who lived in the house after her departure, but evidence suggests that it might have been rented to tenants.

On the 1937 aerial photo, a house is clearly visible in the same location as the “miller’s house” from 1893/1920 on the north shore of Travis Lake. The picnic hall structure is also visible. The 1937 aerial photos also depict the other two farmsteads on modern-day Tract 110, which were at that time, independent properties and active farms owned by J. D. and Elsie J. Broaddus (CC DB 111:9), and Augusta A. Bradley’s Forest Hill (CC DB 110:441).

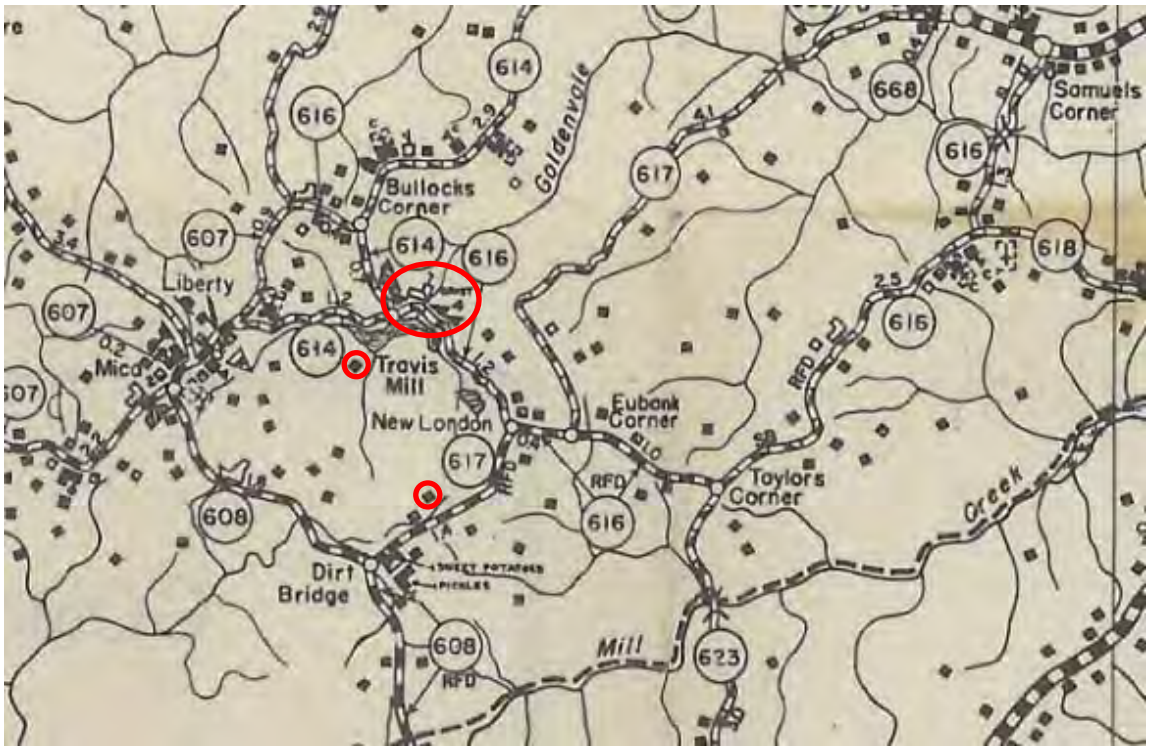


Map 28. Tract 110 (top) with various occupations marked; the house and picnic hall on the north shore of Travis Lake (bottom) in 1937.

Map 29. Farmsteads on modern-day Tract 110 in 1937: Top-easternmost farm (Broaddus); Middle-southernmost farm Forest Hill (Bradley), Bottom-northwestern farm (Saunders).

In 1937, Washington D. C. patent attorney Charles M. Thomas and his wife Katherine Gregory bought the pond and adjoining property to the east from the Dickinson Land Company (CC DB 110:61). In 1938, Thomas purchased two additional parcels from J. D. and Elsie J. Broaddus (CC DB 111:9), and Augusta A. Bradley (CC DB 110:441) Broaddus and Bradley were owners who occupied their lands, which correspond to the two southern occupations of modern-day Tract 110. Thomas's full time residence remained in Washington D. C., and the newly acquired Caroline County property was to become a summer retreat, which came to be known as The Lodge. "The Thomases constructed the Lodge in 1938-39, a rambling retreat overlooking the lake, with saddle-notched lodge walls, log porch posts, substantial stone chimneys, and other elements of the Rustic Style" (Pezzoni 1995). Informant Nancy Napier (2007) reported that her father, Robert A. Bullock, who resided on a farm just to the north at that time (see Tract 100), also operated a mobile sawmill. Napier remembered, "my dad had a sawmill also when he was at A.P. Hill. And he cut the logs at the sawmill that went into…[the] Lodge." In November of 1940, Thomas acquired the last parcel of land that made up modern-day Tract 110. Travis Cosby and his wife Ruth Hillman Cosby sold the old Travis home to Thomas (CC DB 113:297).

In 1940, the Lodge and other support buildings built by Thomas were noted on a map of Caroline County as "seasonal dwellings," and Travis's now defunct mill was marked as "seasonal industry (flour, grain, etc.), not in use." Forest Hill and the Bullock farm on modern day Tract 110 were both noted as "farm units, in use." No farm, in use or otherwise, is noted at the location of Lavinia Saunder's farm, suggesting that it was abandoned *ca*. 1920, when it is presumed that she died.



Map 30. 1940 Caroline County road map showing the buildings on Tract 110.

On June 10, 1941, the United States government acquired 621 acres from C. M. and Katherine Thomas of Washington, D. C. for the amount of $60,429.00 (CC DB 114:269). This tract was, by far, the single most expensive tract acquired by the U. S. Government for Camp A. P. Hill. Because of the uniqueness of the structure and its setting, the Lodge was reutilized by the Army after acquisition. The Army used the Lodge "as bachelor officers' quarters, officers dining facility and club, and temporary family housing. Local people remember boating on the lake and dancing at the Lodge during World War II" (Pezzoni 1995). In 1943, the development associated with the Lodge and its support buildings are clearly visible on the aerial photos. A house is clearly visible in the same location that was noted on the 1937 aerial photograph. This is also the same location as the "miller's house" mapped in 1893/1920.

Map 31. The Lodge in 1943 (right). Support structures to west, including house (left) in same location as the "miller's house."

The Lodge and associated support structures were listed on the Virginia Landmark Register in 1996 as the Lake Travis Historic District (Pezzoni 1995). Although the nomination describes the house west of the Lodge as having been built in the 1930s, there is ample evidence for a house in this location in the nineteenth century, perhaps earlier. As mentioned in the nomination, elements of an older structure might have been incorporated into the current building. The Lodge and all the structures in the Lake Travis Historic District continue to be used by the Army.

Illustration 8. 1995 appearance of house on Lake Travis north shore, west of the Lodge.

Illustration 9. Modern appearance (2007) of The Lodge.

Summary: Multiple occupations occurred historically on modern-day Tract 110. The earliest possible occupation of modern day Tract 110 dates to the 1730s, when Benjamin Robinson was reported to have a mill on Goldenvale Creek, downstream from the current Travis Lake. In 1790, Absalom Bradley built Popular Grove/Forest hill in the southern portion of the modern-day tract. In 1817, the northern portion of modern-day Tract 110 was owned by Richard Tankersly of Richmond, who sold it to Charles Talliaferro that year as part of a 585-acre tract. On this land, Talliaferro built a plantation called "Cherry Grove," an occupation located outside modern-day Tract 110. At some

point prior to 1855, William Callawn had acquired 349 acres of the Cherry Grove property, which was distributed as part of his estate in that year. The portion of Tract 110 north of modern-day Travis Lake was owned by William A. Callawn, but the mill site and pond was owned by Hay Saunders by 1864, but most likely Saunders had established the mill much earlier. During the Civil War, the Bradley family was in residence at Forest Hill, and the Saunders Mill was in place, which he kept it until his death in 1868. At some point after the Civil War, the mill fell into disuse, but the Bradley family stayed on at Forest Hill. In 1875, a newcomer from New York, F. M. Travis, married the granddaughter of William Callawn, Bettie B. Callawn. Through this connection, Travis acquired the mill pond and property surrounding it. Travis operated a successful grist and saw mill at what became Travis Lake. In the 1880s, Lavinia A. Saunders was farming with her mother and niece at a small farm to the west of Travis Lake. Travis continued his business ventures through the 1890s. Travis retained ownership of the occupied portion of modern-day Tract 110 on Travis Lake until his death in 1925. At that time, the property was willed to his grandson, Travis Cosby. Cosby inherited the Travis home, but there is no indication that he continued work at the mill. Sometime prior to the 1930s, the Broaddus farm was established to the east of Travis Lake on modern-day Tract 110. The economic climate leading up to and during the Great Depression affected the history of modern-day Tract 110. In 1929, the Dickinson Land Corporation acquired a portion of modern-day Tract 110 with plans to resell the property. The stock market crash made that impossible. At that time, the Bradley and Broaddus occupations/farms within modern-day Tract 110 continued on as before, but Saunders' farm appears to have been abandoned. In 1937, Washington D. C. lawyer, Charles M. Thomas, purchased the first of four tracts that would become modern-day Tract 110. Thomas planned to turn the property into a summer retreat and in 1938-1939, Thomas had the rustic-style Lodge built with logs cut and milled by nearby neighbor Robert A. Bullock. In 1938, Thomas acquired the Bradley and Broaddus farm lands and in 1940, Travis Crosby sold him the Travis farmstead. It is unclear if the farmsteads to the south and east of Travis Lake were abandoned or rented after Thomas's purchase. In 1941, the U. S. government acquired 621 acres from Thomas including the Lodge, its support buildings and Travis Lake. The Army utilized all these buildings for various purposes and continues to do so today. They are now included within the Lake Travis Historic District. The eighteenth-century Bradley farm, Forest Hill, as well as the Broaddus and Saunders farms, were not preserved.

Tract 155 (Map Sheet 2, Quad A11)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the eastern-central portion of this tract in Caroline County. In 1941, when the government acquired the property, occupation was situated within the western central portion of Tract 155, which encompassed 263 acres. Two structures were noted within the tract on the 1943 aerial photo.

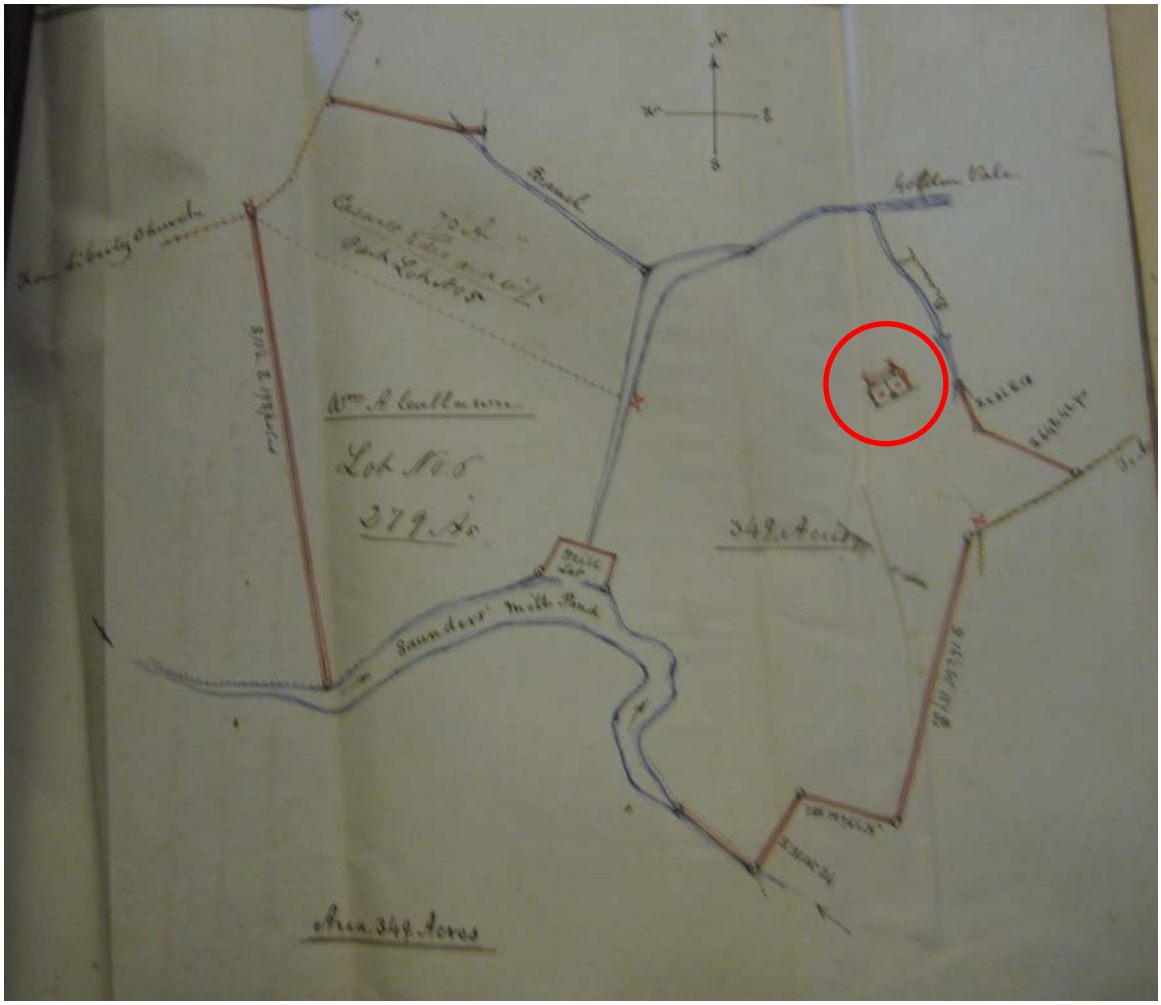
Previous researchers have suggested that in the 1790s Benjamin Robinson operated a mill on Goldenvale Creek at a location on the boundary between modern-day Tracts 155 and 110, which was situated upstream from the later Saunders Mill, which in turn became Travis Lake (Pezzoni 1995). If that was the case, Robinson could possibly

have been the earliest known owner and occupant of modern-day Tract 155. However, primary documentation to confirm this theory has not been located and no remnant of his activities have been identified on modern-day Tract 155.

From 1817 to 1855, the history of Tract 155 is identical to Tract 100.

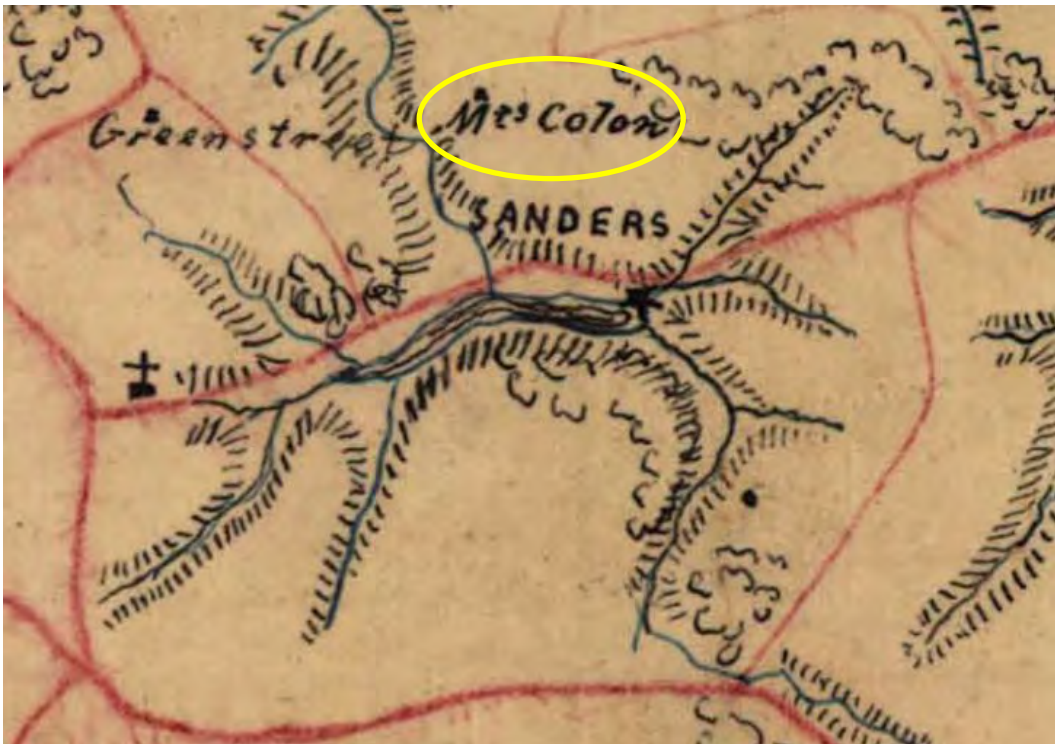
At some point between 1846 and 1855, William Callawn acquired 349 acres of the Cherry Grove plantation, including the location of modern-day Tract 155. Upon William Callawn's own death in 1855, his estate consisted of "1828 Acres, to wit, 1479 Acres in one body & 349 acres, detached (being Taliaferro's former tracts)" (Callawn vs. Callawn 1857, CRHC unindexed file of Caroline County Chancery Court Ended Papers). These lands were distributed to Callawn's heirs in September of 1855. William Callawn's heirs were: Ann Holloway (granddaughter), Richard Callawn (son), Sarah Callawn (daughter), Caswell Eads (son-in-law), J. W. S. Callawn (son), William A. Callawn (son), and Elizabeth Callawn (widow).

One of them was to his namesake, William A. Callawn. He received a tract of land designated as Lot No. 6, which was divided into two adjacent portions of 279 acres and 349 acres, all being out of the former Taliaferro land. William A. Callawn was also allotted five adults and one child as his slaves (Callawn vs. Callawn 1857). A map of the larger, eastern portion of the property depicts a house. In 1855, the property was described as, "William A. Callawn's plantation which he is now residing" (CC DB 49:199). Also that year, William A. Callawn purchased the adjoining 70-acre tract allotted to Caswell Eads (CC DB 49:199), which gave him ownership of the entire acreage north of Saunder's Mill Pond (modern day Travis Lake), with his residence being in modern-day Tract 155. William A. Callawn appears paying tax on the land as early as 1853, which suggests this date as the initial occupation of modern-day Tract 155, and construction of the house in question (CC LB 1853:6). Although William A. Callawn owned all of the property immediately north of what was then called Saunder's Mill Pond, the mill itself and the pond were under different ownership, that of Hay Saunders, who operated the milling operations.



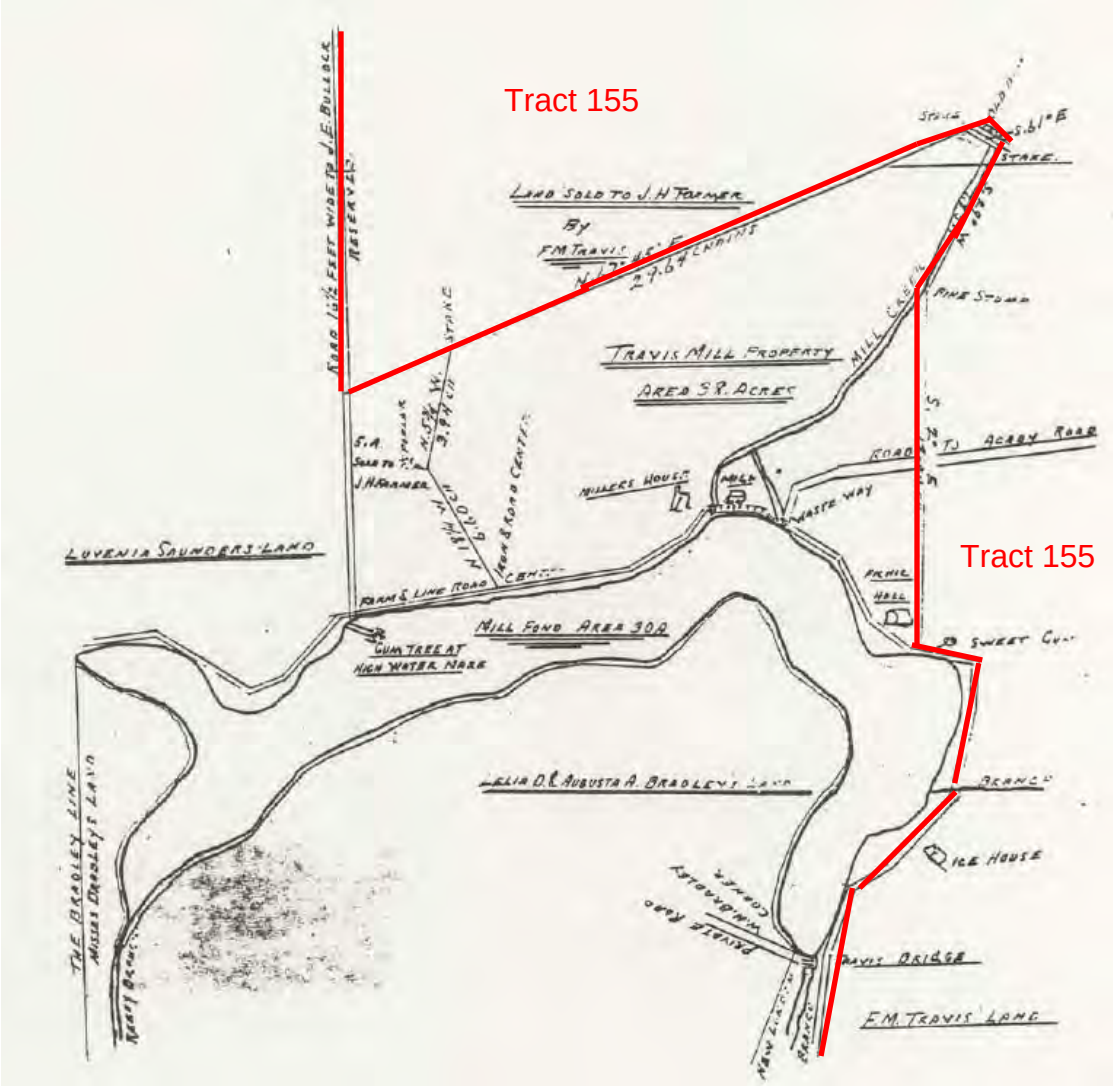
Map 32. Portion of the 1855 plat map of the William Callawn Estate, showing the two tracts allotted to William A. Callawn, which includes his house.

In 1863, William A. Callawn married Emily Andrews (CRHC file 2004-040-049-006). Together, they had three children: Hortensia S., Clarence Vernon, and Malvonia W. Collawn. In 1864, the house of "Mrs. Colon" (a phonetic spelling of Callawn) was mapped in the same location northeast of Saunders Mill. Many of the family names noted on the Gilmer map have incorrect, phonetic spellings. In 1867, William A. Callawn was still shown as paying tax on the land, which suggests that he and his wife Emily continued to live in the house.



Map 33. The 1864 Gilmer map of Caroline County showing the house of "Mrs. Colon" situated to the northeast of Sanders [Saunder's] mill pond.

There is a break in the chain of title for Tract 155 from William A. Callawn's ownership in 1867 until 1893. At some time in that decade, Francis Marion Travis (also known as F. M. Travis) acquired the properties that encompass modern-day Tracts 155 and 110, uniting the operations at the mill pond and the lands to the north. Travis' wife, Bettie, was a Callawn, and the land might have been acquired through her. F. M. Travis operated a grist and sawmill until the 1920s, utilizing the vast tracts of woods on modern-day Tract 155 in his sawmill operations (Pezzoni 1995). In 1920, portions of modern-day Tract 155 were depicted on a plat of Travis Lake drawn by F. M. Travis, who was at that time the Surveyor for Caroline County (CC DB 89:232). The occupied portion of modern-day Tract 155 and the original William A. Callawn house are not depicted, suggesting that while the land was owned by F. M. Travis, the focus of activity and occupation was refocused to the milling operations on Travis Lake. This period of time might signal the transition from owner to tenant occupancy of the William A. Callawn house.

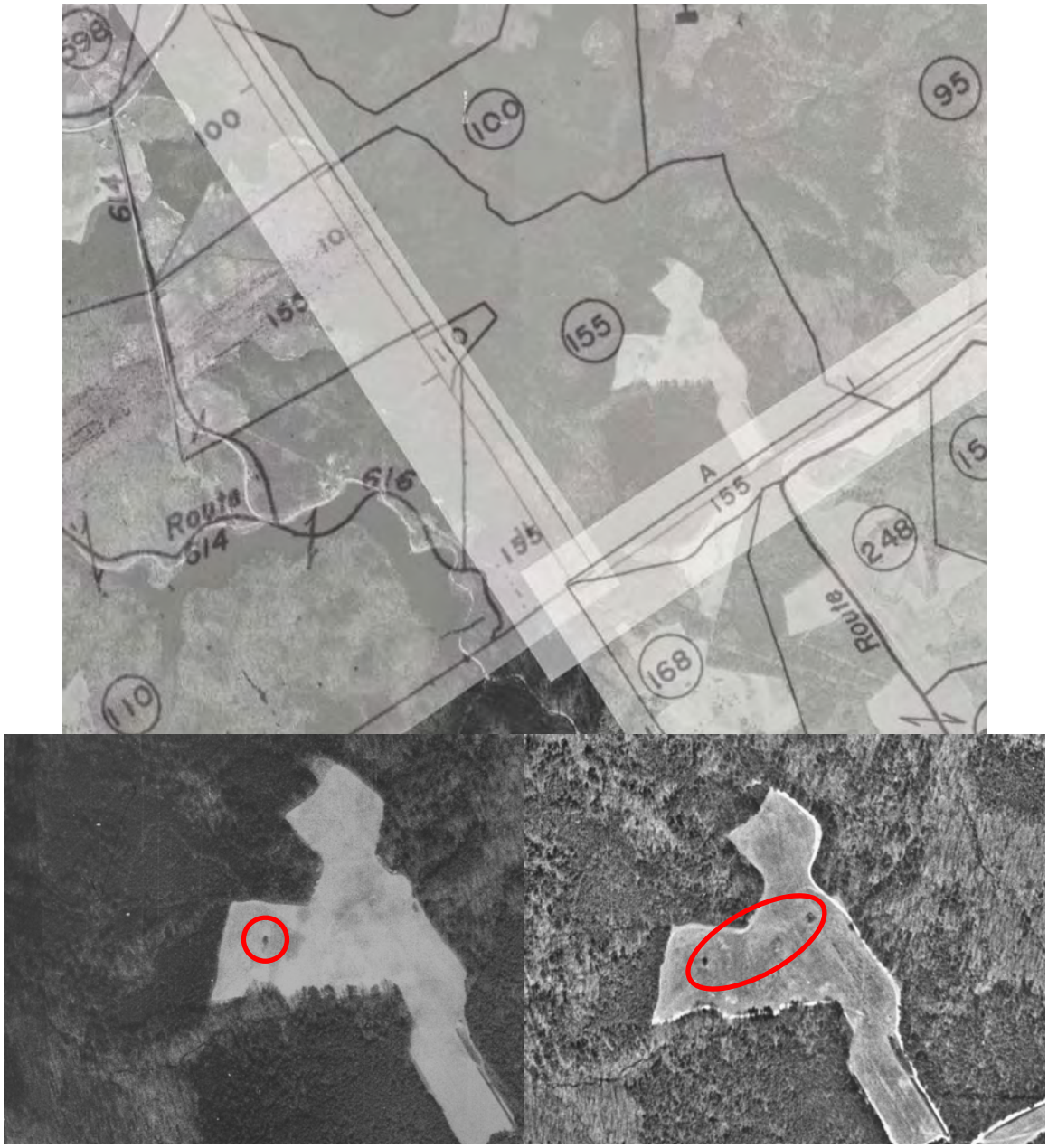


Map 34. Detail of an 1893 plat (redrawn in 1920) showing portion of modern-day Tract 155 (CC DB 89:232).

F. M. Travis died in 1925 (Pezzoni 1995) and his heirs inherited his lands. In September of 1928, F. M. Travis' son, Eugene B. Travis of Bowling Green, had a parcel of land that comprises a portion of modern-day Tract 155 (CC DB 98:372). In 1931, E. B. Travis added a second tract of land (CC DB 98:372). Together, they made up modern-day Tract 155. Since E. B. Travis and his wife, Alice Maud (nee Broaddus), were residents of Bowling Green, they were not in occupation on modern-day Tract 155, and the house might have been rented to tenants.

In 1937, modern-day Tract 155 appeared on the aerial photographs with a single, small structure in the western central portion of the tract. Further examination of the 1943 aerial photograph shows what appear to be two structures on the tract. In both cases, land was open or in pasture around the structures, and in cultivation at the western-most portion of the property. The central part of the farm was left in timber. It is unclear why there is a discrepancy between the 1937 and 1943 aerial photographs. It is possible that

one of the structures was somehow obscured in the 1937 photograph. The structure that is visible in 1943 corresponds to the location of William A. Callawn's house shown on the 1855 map. The secondary structure to the east might be an outbuilding associated with the farmstead/Callawn plantation.



Map 35. Top: Tract 155; Bottom: 1937 aerial photo (left), and 1943 aerial photo (right).

By 1941, Eugene B. and Maude B. Travis of Bowling Green were joined in their ownership of modern-day Tract 155 by other heirs of F. M. Travis: Roscoe C. Travis (a widower, also of Bowling Green), and John R. Travis and his wife Edith M., of Fredericksburg. None of the owners were in occupation, again suggesting that the

property was rented. On August 6th of that year, the United States government purchased the 263-acre Tract 155 for $7,500.00 from the Travis family owners.

Summary: It is possible that Benjamin Robinson owned and operated a mill on land in modern-day Tract 155 as early as the 1790s, but that occupation has not been confirmed. In 1817, the location of modern-day Tract 155 was owned by Richard Tankersly of Richmond, who sold it to Charles Talliaferro that year as part of a 585-acre tract. On this land, Talliaferro built a plantation called "Cherry Grove," an occupation located outside modern-day Tract 155. At some point prior to 1855, William Callawn had acquired 349 acres of the Cherry Grove property, which was distributed as part of his estate in that year. At that point, his son William A. Callawn was already resident there on his plantation and in a house shown on the property distribution plat. William A. Callawn began paying taxes on the property in 1853, suggesting this was the time of his initial occupation and construction of the house on modern-day Tract 155. William A. Callawn and his family lived in the house at least through 1867. At some point between 1867 and 1928, the occupied portion of modern-day Tract 155 was acquired by E. B. Travis, who had an established residence in Bowling Green, suggesting that the farm was rented. By 1941, ownership of Tract 155 was shared between E. B. Travis and other members of the Travis family, none of whom resided on the land. The Travis family retained ownership of the property until acquisition, although it appears that the farm was rented out.

Tract 163 (Map Sheet 7, Quad E6)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the south-central portion of this tract in Caroline County. In 1942, when the government acquired the property, the occupation was situated within Tract 163, which encompassed 309 acres. Only one occupation, a farm known as "The Glen" was noted within the tract on the aerial photo.

The documentation of occupation on Tract 163 began on January 1, 1919, when Burleigh H. Kay and his wife Bessie May Kay sold a parcel of land to Richard C. Carter (Caroline County Deed Book 87:240; hereafter cited as CC DB). It is possible that the Kays had already built a house and were in residence on the land when they sold it to Carter. In the period from 1921-1932, Carter and his wife, Blanche, sold five parcels totaling approximately 129.5 acres out of their original purchase (CC DB 90:473; 92:113; 93:526; 94:583; 102:356). They retained the portion on which the occupation was located. On September 19, 1931, Carter added additional acreage to his holdings from Frances G. Beale, Executrix and Thomas H. Blanton, Executor of the estate of the late Richard L. Beale, Trustee (CC DB 101:243). This acreage was situated to the north of the Carter farm and appeared unoccupied, possibly because the property was part of an estate.

In the years that R. C. Carter owned this property, he developed it into a prosperous farm with a dwelling, two large barns, livestock and crops. Carter's farm was known as "The Glen." The property was bounded by Highway 620 on the southeast and

Highway 619 on the south, giving Carter excellent access to markets for his surplus crops. Period photographs of R. C. Carter, his family and farm provide glimpses into the use of Tract 163. Based on the evidence, Carter grew cucumbers (for the pickle factory in Milford), hay, tobacco, orchard crops and undoubtedly numerous other garden, truck and/or cash crops (Morton and Morton 2009). Portions of his property remained uncultivated and would have provided wood and other wild resources. The level of production on Carter's farm also provided employment for others in the community.

Map 36. Tract 163 (left), and the R. C. Carter farm (right) in 1937.

Illustration 10. The Richard C. Carter family and workers in their cucumber field.
Photo courtesy of Steve Nazigian.

Illustration 11.R. C. Carter's farm and his main mule handler, Bob Baylor.
Photo courtesy of Steve Nazigian.

Illustration 12. Richard C. Carter holding Charles Anderson in a field of tobacco.
Photo courtesy of Steve Nazigian.

Illustration 13. **Hired Fruit-pickers at end of day. R.C. Carter farm, "The Glen", Brandywine VA. abt 1925**

Map 37. Portion of the 1940 road map of Caroline County showing the building, R. C. Carter's farm, on modern-day Tract 163 as "farm unit, in use."

On May 15, 1942, in consideration of $6,300.00, Richard C. Carter and his wife, Blanche H. Carter, conveyed their 309-acre farm to the United States government (CC DB 117:463). At acquisition, Richard C. Carter only owned one other 1-acre tract that showed no sign of occupation, which suggests the farm on Tract 163 was his primary residence.

Summary: There is no documentary or photographic evidence of occupation on Tract 163 prior to 1919. However, because the chain of title is incomplete, it is possible that Burleigh H. Kay or other previous owners had already occupied and improved the land sold to R. C. Carter. Without a doubt, the farmstead observed on the 1937 aerial photograph can be attributed to R. C. Carter, spanning from 1919-1941. Carter was the sole owner-occupant with a residence and outbuildings, who raised a variety of cash crops on his farm, which was known as "The Glen."

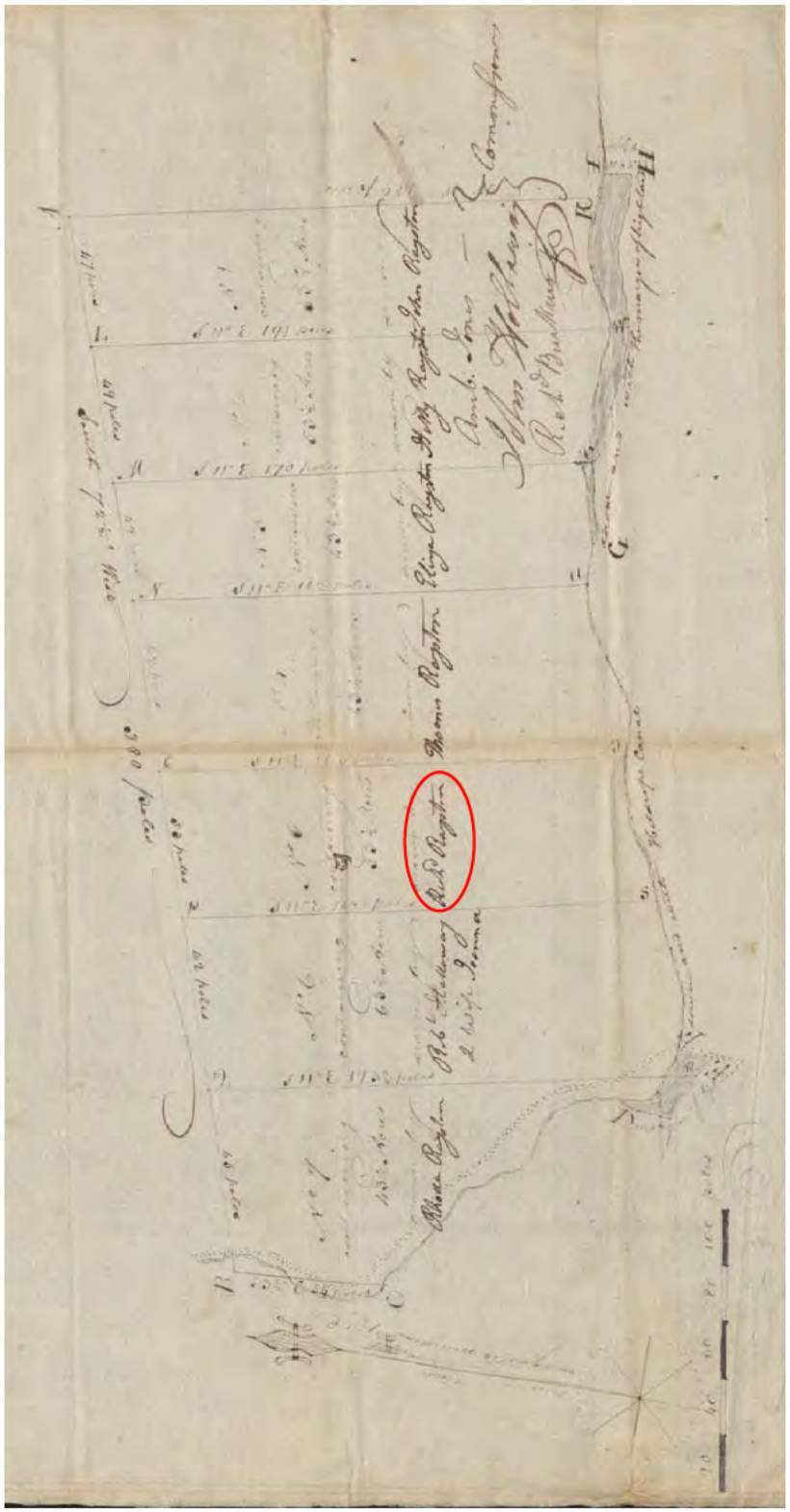
Tract 183 (Map Sheet 4, Quad D3)

Occupation History: Inspection of the 1937 aerial photo shows a large farmstead complex on this roughly L-shaped tract in Caroline County. In 1941, the government acquired the property for $4,500.00 as Tract 183, which encompassed 141.1 acres. One main farmstead complex was noted within the tract on the aerial photo, situated centrally to the two sections of the L-shaped property. An additional, unidentified structure is located south of the main farmstead complex fronting on the main access road within the property.

Documentation of occupation on Tract 183 is fragmented and begins in 1700, with a farm known as "Bloom's Grove." Thomas F. Royston is probably best known as one of the founders of Fredericksburg, who, along with John Buckner, received a royal patent for 2,000 acres of land in 1671, on which the town was later laid out (Embrey 1994:50). That same year, John Buckner, Robert Bryan and Thomas Royston received a patent for 3,553½ acres situated, "in the freshes of said river on the south side called the Golden Vale" (Campbell 1954:17). This patent includes the location of modern-day Tract 183. Somewhat lesser known was that Royston was actually a resident of Caroline County at a farm called "Bloom's Grove," where he built a house *ca*. 1700 (Central Rappahannock Heritage Center File folder #2007-028-P-003-005, hereafter cited as CRHC). Although Tract 183 did not contain Royston's house (see history of Tract 323), it was apparently portion of the farm property (Callawn vs. Callawn 1857, CRHC unindexed file of Caroline County Chancery Court Ended Papers).

All of the deeds required to track the chain of title for Tract 183 were not located. However, it was possible to construct a fairly complete land history using other documents. Evidence suggests that Thomas F. Royston occupied Bloom's Grove full time as his primary residence. Thomas F. Royston was married and had five sons. Of them, his forth son was born in *ca.* 1765, and was named Thomas Royston, Jr. On November 27, 1788, Thomas Jr. married Susannah Holloway (CRHC 2004-040-027-016). Together, they had eight children, including son Richard Royston. In 1815, Thomas F. Royston, Sr. died and his estate was distributed amongst his heirs.

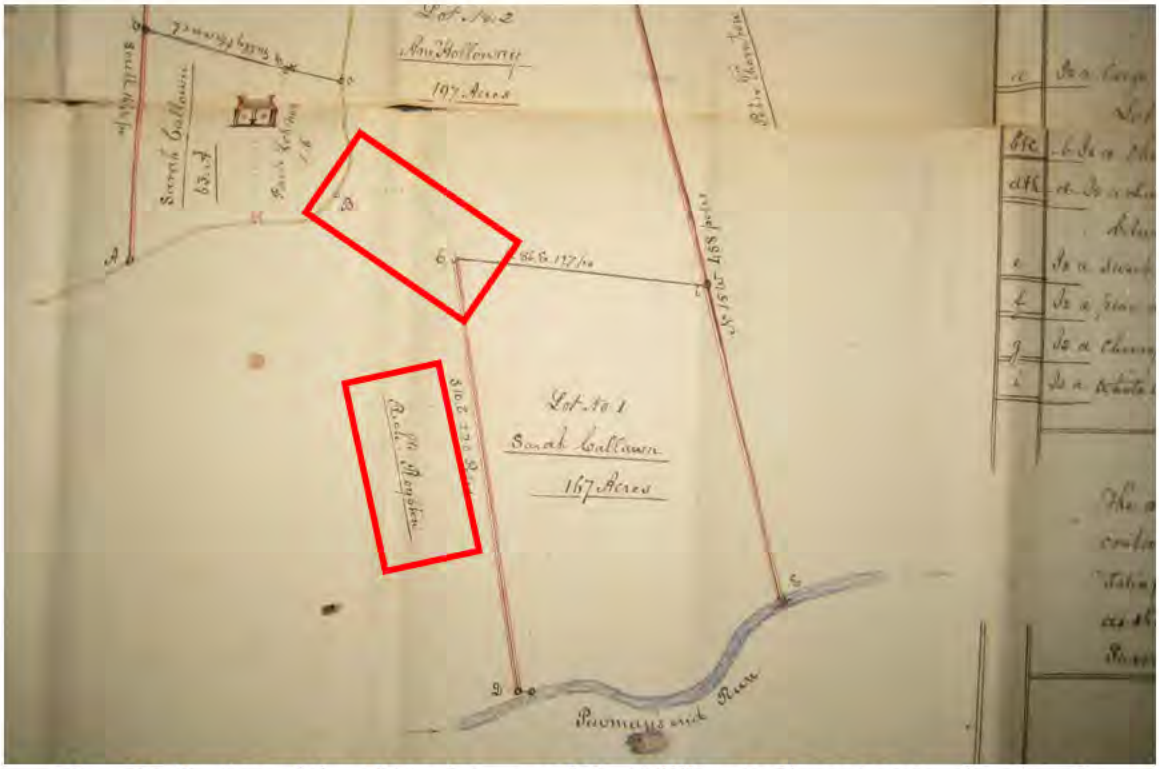
In 1817, Robert G. Holloway and his wife, Joanna Royston Holloway (one of the heirs), filed a decree with the Virginia Circuit Court claiming Joanna's share of her father's property upon his death (Caroline County Chancery Causes: Robert G. Holloway & Wife vs. Admr. of Thomas Royston etc, 1817-009 [hereafter cited CC CC]). As a result, the court ordered Thomas Royston's estate to be divided equally amongst the heirs: Rhoda, Richard, Thomas, Elizabeth, Hetty and John Royston, as well as Robert G. Holloway and his wife Joanna Royston Holloway. In this distribution, Richard Royston received lot No. 5 with 53½ acres, where the occupied portion of modern-day Tract 183 is located. At the time, Richard Royston was less than 21 years old, and his brother, Thomas, was acting as his guardian. There is no indication that Richard Royston or anyone else occupied this tract at this time.



Map 38. 1817 Plat of distribution of lands of Thomas Royston estate showing Rich'd Royston's land (from CC CC Robert G. Holloway & Wife vs. Admr. of Thomas Royston etc., 1817-009).

After this distribution of Thomas Royston's property, "during the 1820s, 30s and 40s, however, he [Richard Royston] gradually acquired the property his siblings had inherited" (McLearen *et al*. 2003:4-9).

In 1855, when the neighboring estate of William Callawn, Sr. was divided amongst his heirs, the land mapped as lying adjacent to the west of "Lot No. 1," assigned to Sarah Callawn, and situated north of "Pewman's End Run," was at that time owned by Richard Royston, grandson of Thomas F. Royston. Royston's property is the same as the land he inherited in 1817, and the occupied portion of modern-day Tract 183. In the survey calls of the property on the map, "B" is described as "the junction of an old road with the main road a corner with Rich'd Royston." This road, present and in use on Tract 183 at the time of acquisition, dates at least to 1855, and probably earlier, which suggests that the property might have been occupied at the time of Richard Royston's ownership. Richard Royston himself is known to have lived further west, on modern-day Tract 520. The eastern, unoccupied, portion of modern Tract 183 lies within the northern portion of Callawn's Lot No. 1.

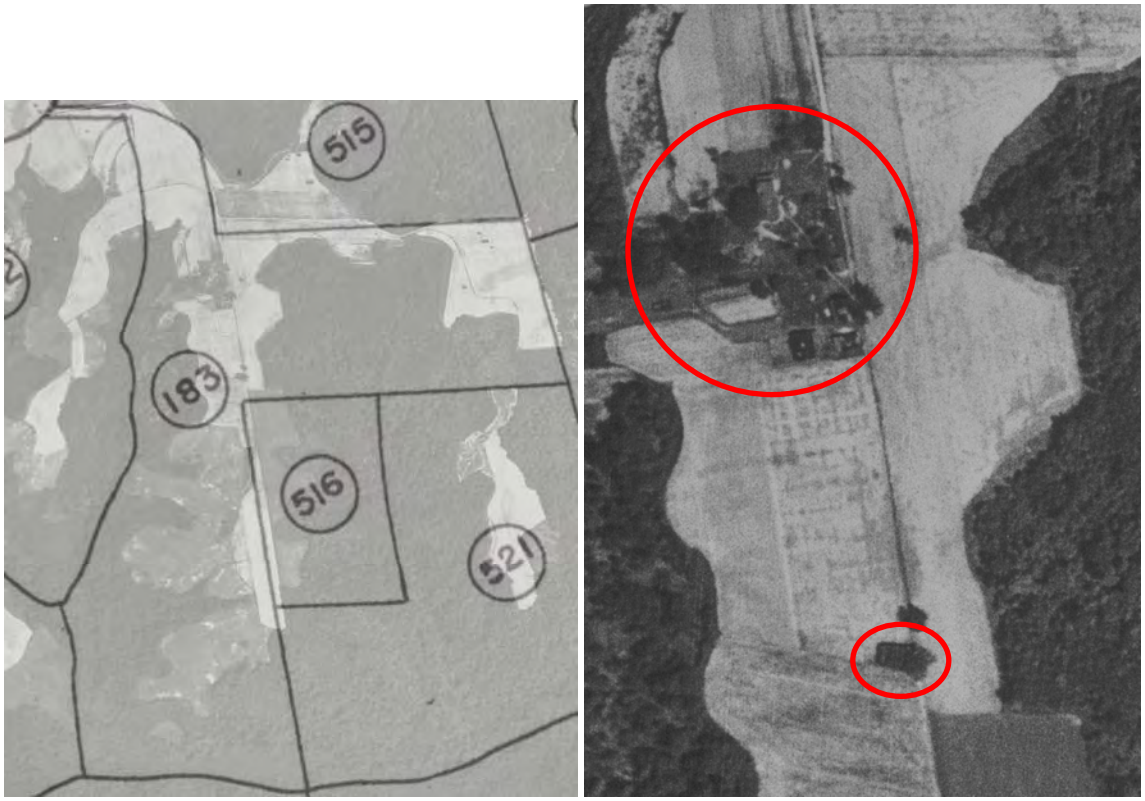


Map 39. Portion of the 1855 plat map of the William Callawn Estate, showing the adjacent property owned by "Rich'd Royston," (bottom) and the access to the main road (top), which includes the occupied portion of modern-day Tract 183.

In 1867, Richard Royston died. In his will, Royston granted all his property in Caroline County to his nephew by marriage, Robert G. Holloway, Sr. (who married to Johanna Royston), who also acted as his executor (CRCH file 2004-040-323-028). This property included the occupied portion of modern-day Tract 183. Holloway resided at Spring Garden (see Tract 221), and would not have lived at modern-day Tract 183

(Massey 2009). Any farm that might have existed on the property at that time might have been rented, or even abandoned in the wake of the Civil War.

After Robert Holloway Sr.'s ownership, there is a break in the chain of title. On March 6, 1925, Ernest S. Robb purchased a portion of the property where modern-day Tract 183 is located (DB 95:335). On April 17, 1935, Robb added to his landholdings by inheritance, which accounted for the remainder of the property included in modern-day Tract 183. Robb did not own the entire 141.4 acres for very long. On September 24, 1941, the United States government acquired the 141.4 acres from Robb and his wife Dorothy T. for $4,500.00. At the time of acquisition, Robb and his wife were residents of Essex County, and therefore not in residence on modern-day Tract 183 (CC DB 115:363). The large farm complex noted on the 1937 aerial photograph was apparently rented out to tenants.



Map 40. Tract 183 (left), and the unidentified tenant farmstead (right).

Map 41. Portion of the 1940 road map of Caroline County showing the "farm unit, in use" on modern-day Tract 183.

Summary: From *ca*. 1700, modern-day Tract 183 was part of Bloom's Grove Farm, owned by Thomas F. Royston and subsequently by his son of the same name. When Thomas Royston, Jr died in 1815, his son Richard Royston inherited the property on which modern-day Tract 183 is located. Richard Royston lived elsewhere, but improvements were possible on the tract by 1855. At this point, the access road from the property to the main road was well established, suggestive of occupation. When William Callawn's estate was divided in 1855, portions of the Bloom's Grove Farm plus other properties were distributed to his heirs, including his daughter Sarah Callawn. Her property contained the unoccupied portion of Tract 183. When Richard Royston died in 1867, he willed all his property to his nephew Robert G. Holloway, Sr. Although Holloway owned it, he lived at Spring Garden. If the property did contain a farmstead at that time, it was most likely rented to a tenant, or possibly abandoned in the wake of the Civil War. Between 1925 and 1935, Ernest S. Robb acquired the entire 141.4 acres that comprised modern-day Tract 183. In both 1937 and 1940, an active farmstead was present on the western portion of the property. However, as an Essex County resident, Robb most likely rented the farmstead to a tenant.

Tract 190 (Map Sheet 2, Quad G9)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the southern portion of this tract in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 190, which encompassed 10.1 acres. One farm complex was noted centrally within the tract on the aerial photo.

The history of occupation on modern-day Tract 190 appears to date to the postbellum period. According to informant Cleopatra Coleman (2007), her family lived "in what's referred to as the…Mica area of A.P. Hill. My family had lived there for several generations, four generations to be specific…this was land that had been in my family since the time of slavery…We had our own land and our own home…This is a large place that we have with many outer buildings we have accumulated through the generations…Again, as part of that time, there was a strong sense of community. People were pretty stable, that is, families were not moving here and there. There was a home place, and that's where people lived generation after generation after generation." The property had been acquired and initial occupation made by Coleman's ancestors. Surprisingly few records were located related to this occupation.

In 1920, Philip Jones (43) lived on and farmed modern-day Tract 190 with his family. His household consisted of his wife Jennie (39, also known as Jennatta Jones), sons Andrew (18), Philip J. (15), Herbert (11) and Albert (8), along with daughter Grace (3 years, 3 months). The census records specifically describe Philip as "black," but the rest of the family members as "mulatto" (U. S. Census 1920).

On March 3, 1930, Herbert Jones formally purchased the 10.1 acres of modern-day Tract 190 that had belonged to his family before him (CC DB 99:576). At that time, Herbert was 22 years old, single and lived on modern-day Tract 190 with his widowed mother, Jennie Jones (45), his sisters Grace (13) and Mary (9) and his uncle, Jonus Jones (64) (U. S. Census 1930). Cleopatra joined the family in 1934, daughter to Maurice Alvin Kay and Gracella Jones Kay, and described family life there in the 1930s. "My mother who gave birth to me—she and my father married when they were teenagers, and so she gave birth to me when she was still a teenager. Married though she was, she was still a teenager. And my grandmother then said, 'Well, you're nothing but a baby yourself' to her daughter. "'You aren't taking this baby away from here. This baby stays here,' and so I did. And so for all practical purposes, my grandmother raised me and my mother" (Coleman 2007). Coleman (2007) pointed out, "But we're talking black family here now, and my father was a hard-working man all of his life. As a young man and as a not-so-young man, he was a hard-working man. But back in that time, it was really Grandmother who drove the family, so to speak. It was Grandmother who had the vision and designed the plan for Mother and Daddy and a maiden aunt who was still in the home and a bachelor uncle who lived in the home as well."

Informant Cleo Coleman lived on modern-day Tract 190 prior to acquisition and was able to provide ample information on the occupation. Although the Joneses lived in the Mica area, their community focused around the African-American school and church. Coleman (2007) recalled, "I attended Bethlehem School [Tract 17]. In that day and time, the schools for Negroes were, for the most part, started by churches, and most of the churches here in Caroline County for blacks and whites were Baptist, of the Baptist denomination. So most of the one-room schools that were built for colored children were built by the black Baptist church. And our church was the Bethlehem Baptist church [Tract 106], and so the school, of course, built by that church was Bethlehem School."

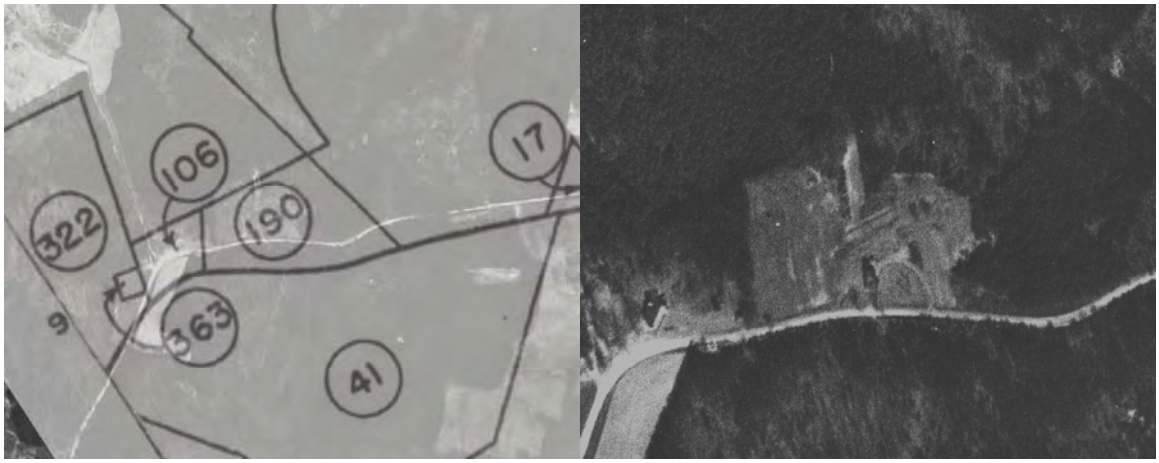
In describing her family's tenure on modern-day Tract 190, Coleman (2007) reported that, "They, like most other people at that time in the community, were farmers. They raised their own food crops and preserved them throughout the year so that they could…eat…So we raised essentially the food crops and corn, lots and lots of corn because, again, being on a farm, you had to feed the animals. Chickens had to be fed, pigs had to be fed because they provided the meat that the family ate too year round…We raised lots of potatoes, both white potatoes and sweet potatoes." Coleman (2007) also noted that on the Jones farm "there were many of them on our property, fruit trees and other trees."

Coleman (2007) also provided some details of the family farm. She described, "our large old frame home [had]…the family well…just outside the back kitchen door and the back porch…that important kitchen well that provided us with drinking water as well as the water for bathing and the big aluminum tub two or three times a week and water for washing the clothes that my grandmother washed using a scrub board." Coleman (2007) pointed out that, "most of those home places were large enough so that they could, as our home place was, take care of or house three generations of folk." The farm also, "had quite a henhouse, and my grandmother was really partial to what she called dominiques. They were black and white chickens…There was a smokehouse too, because, again, this business of preserving food for the year round was critical. So, yes, there was a smokehouse where bacon was cured and the hams were put out there, and there was – it was a little, if I can remember correctly, building that wasn't quite all the way down to the ground. There was an air space that met the floorboards, between the floorboards and the walls. And there was a smoke pit on the inside there, and a fire was kept going in there, a little fire going in there" (Coleman 2007). Coleman (2007) continued by observing, "The lands were always kept neat and clean and free, everything—a place for everything and everything in its place. So there was a pit where you put tin cans, for instance, in, you didn't throw them around. They were placed in that pit and dirt placed over them." The farm had not only utility, but also beauty. "Flowers were planted in certain order and that kind of thing…I mean, our yard, peonies and roses, oh my Lord, things were just beautiful," (Coleman 2007).

The family produced food for itself, which had to be stored. "We did not have electricity in Caroline County" (Coleman 2007). Coleman (2007) noted a particular feature of the house in that, "several of the root crops were stored that way… you laid by food under the house in sand things like sweet potatoes, white potatoes for that matter, onions, and so forth. The turnips and so forth were all placed in sand under the house where it was cool, and they were kept…Sometimes even something like cabbage…All through the winter you could go under and pull out things from the storehouse, as it were – as it was called. You could stoop, and there was an opening, and children were – that was one of my jobs to go in. An opening maybe three feet, four feet wide and about that high (indicating), and I would go in, and they had buckets of sand that were put down, and then the vegetables, then, the root crops, were put in that sand and covered. And I'd go in with a basket or something and bring out whatever it was my grandmother wanted, whether it was sweet potatoes or turnips or onions or whatever it was. But that was under the house. Some people had regular basements, you know, or cellars they were called.

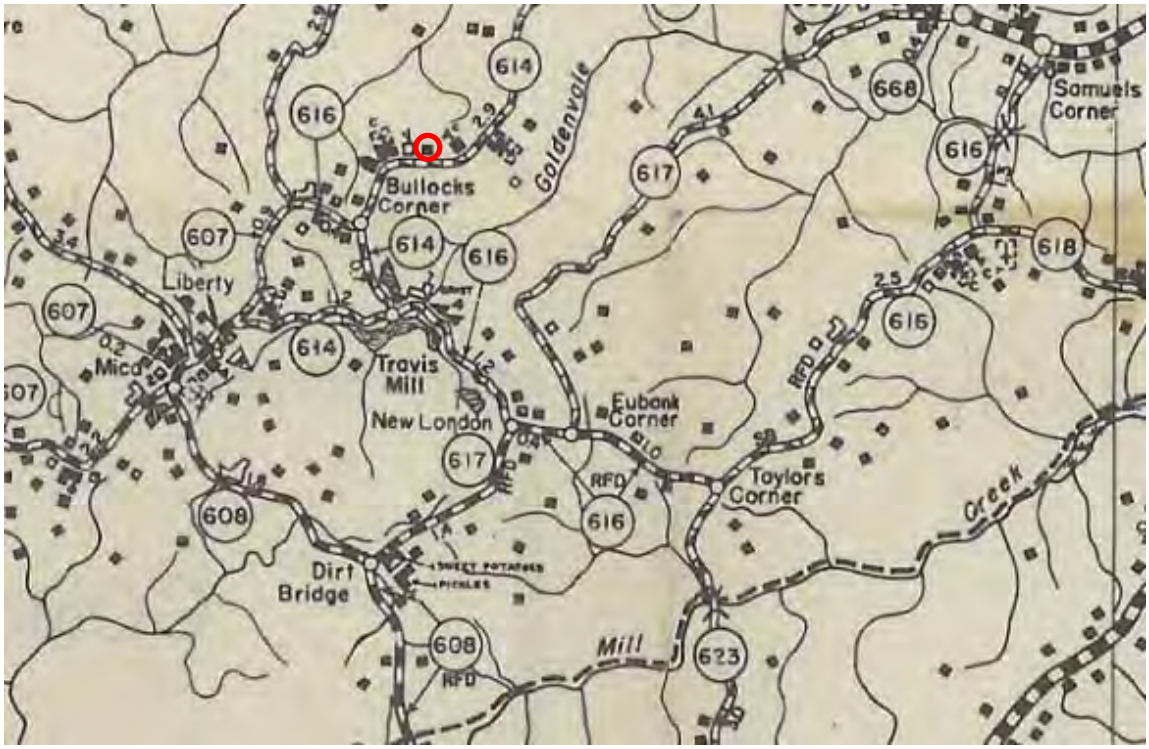
Our home had an unfloored cellar, as it were, the storehouse we called it, where those things were stored. The house was built so that—prior to its building, of course, they had been dug out an area…it was not floored. It was simply dirt down there, and then with the sand placed over that, the house walls built up around that, and then the first floor over it."

In 1937, the Jones family farm was captured on an aerial photograph. The large farmhouse, barn and cultivated lands are clearly visible.



Map 42. Modern-day Tract 190 (left) and the Jones family farm (right) in 1937.

In 1940, the Jones family farm on modern-day Tract 190 consisted only of Jennie Jones, the 58 year-old head of household, her granddaughter Cleopatra Kay (6) and her grandson Manuel B. Jones (2). Jennie was listed as keeping house and as a landowner, and Cleopatra attended school (U. S. Census 1940). At that time, Cleopatra's parents lived with her father's family, the Kays, on modern-day Tract 23. Herbert Jones, the legal owner of Tract 190, lived on a rented farm on Route 615 in the vicinity of Linden (see Tract 1) where he had lived and worked previously (U. S. Census 1940). The next closest farm to the Jones place was that of Robert A Bullock (see Tract 110). Also in 1940, the Jones farm was mapped as a "farm unit, in use" on the Caroline County road map.



Map 43. Portion of the 1940 road map of Caroline County showing the Jones Farm on modern-day Tract 190 as "farm units, in use."

Government acquisition of this farm that had been in the Jones family for generations was traumatic, as it was for many other families. Coleman (2007) recalled, "An organ that had been the family for a couple of generations, my tricycle, some carpets, Persian carpets went down in that well that had provided us with cool water for generations there on the place because we knew we could not take those things. So my bike and carpets in particular I remember being—my uncle and my father lowering those down into the well. And many of our things were put in the well, and that was fairly common then because you could not take them with you… Lots of things, lots of things went down the well, buckets and pots and pans and so forth."

On July 29, 1941, Herbert and Ellen Jones of Moss Neck conveyed 10.1 acres to the United States government for $425 (CC DB 114:479). Herbert and his wife did not live on modern-day Tract 190, although he did own it. Instead, his mother Jennie Jones lived there with her grandchildren.

Summary: Initial occupation of the farm on modern-day Tract 190 reportedly began in postbellum period, *ca*. 1870s. Despite a surprising lack of documentary evidence, limited deed and census records, combined with detailed informant data provide a rich portrait of life on the Jones farm, occupied by that family for four generations. By the 1920s, Philip Jones lived on modern-day Tract 190 with his wife Jennie and their family, including son Herbert and daughter Grace. The Joneses were subsistence farmers but owned their land. By 1930, Phillip had died but his widow stayed on the farm with her children and her older brother. They continued their subsistence

farming way of life, and were active in Bethlehem Church and school. That year, Jennie's son, Herbert had purchased the family farm although he did not continue to live there. In 1940, Herbert Jones still owned the Jones family farm although he lived elsewhere. The farm on modern-day Tract 190 was occupied by his mother, Jennie Jones, and two of her grandchildren, including informant Cleopatra Kay (later Coleman), who provided ample details about the layout of the farm and the daily rhythms of farm life in Caroline County in the 1930s.

Tract 203 (Map Sheet 2, Quad E8)

Occupation History: Inspection of the 1937 aerial photo shows occupation in the central portion of this tract along State Route 612 in Caroline County. In 1941, when the government acquired the property, the occupation was situated within Tract 203, which encompassed 256 acres. One large farm complex, Chestnut Grove, was noted centrally within the tract on the aerial photo. The air photo also shows a secondary structure in the north-central portion of the tract, also along State Route 612. The secondary structure, surrounded by cultivated lands, might represent an additional occupation or remote outbuilding.

Many of the early documents of Caroline County have been lost, leaving the origins of property ownership somewhat mysterious. However, the origins of Chestnut Grove reportedly date back to 1790 (Farmer 1937b). Evidence suggests that the builder, original owner and occupant of Chestnut Grove might have been William Kidd. In the *ca*. 1797-1800 period, he was listed as a planter who shipped tobacco out of his Caroline County farm (Fall 1989:40). At his death in 1802, one of his many heirs was his grandson, Henry Kidd. In William Kidd's will he specified that, "I Lend to my beloved Wife Mary Kidd: All that part of my Land lying below the Established Road that now Runs through my Plantation…During her natural life. Or so long as she continues my widow. After that period, my personal Estate line [*sic*] her, to be Equally divided amongst all my children…After my Death" (CC WB 1742, 1762, 1830/Plats 1777-1840:66-67). Apparently it was through this inheritance that Henry Kidd acquired Chestnut Grove, contained within modern-day Tract 203. The Kidd family lived on and farmed the Chestnut Grove plantation during this period of time.

Henry Kidd was listed in the Caroline County census for both 1830 and 1840 (U. S. Census 1830, 1840). In 1850, the census of Caroline County provides more detailed information for Henry Kidd's occupation at Chestnut Grove. That year, Henry Kidd was a 52-year-old head of household. He was a farmer who owned $1,350 worth of real estate. His household consisted of his wife, Maria A. (48); sons William J. (25), John W. (23), Benjamin F. (15), and Henry S. (12); and his daughters Mary F. (17), Maria L. (7) and Betty (3). Alice F. Bullock (53) was also a member of the household. Interestingly, William's occupation was teacher and John's occupation was book agent (U. S. Census 1850). Considering Chestnut Grove's proximity to Rappahannock Academy, a premiere school of its time, it is possible that William Kidd was a teacher there.

At some point between 1850 and 1863, Thomas W. Gouldin purchased Chestnut Grove from Henry Kidd and made it his home. An undated photograph taken in the late 1850s or early 1860s of Thomas Gouldin's house, Chestnut Grove, shows it in its original configuration, prior to subsequent additions and alterations. Numerous farm outbuildings are visible on either side of the house. In front of the house there is a group of people who were reportedly members of Thomas Gouldin's family (Gouldin 1985).

Illustration 14. The Thomas Gouldin house, Chestnut Grove, *ca*. late 1850s/early 1860s.
Photo courtesy of Wirt Gouldin, grandson of Thomas Gouldin.

During the Civil War, Chestnut Grove, like many of the other Gouldin properties, saw the hostilities literally come to the front door while Dr. Thomas Gouldin was in occupation with his family. Informant Herbert Gouldin, grandson of Thomas Gouldin, recounted the following story from Gouldin family history (Farmer 1937b):

> During the War Between the States there was an encampment of Southern troops about two miles from "Chestnut Grove". There were some soldiers at this camp who were related to the owner of "Chestnut Grove", and who obtained permission from their commander to visit here.
>
> When here, these soldiers were invited to spend the night. Because there weren't enough beds in the house to accommodate them, three were to sleep in an old office in the yard.

> During the night some Northern soldiers came here and killed the three in the office. It is said that one of them was asleep on a couch beneath a window and that a Northern soldier reached through the window and killed him.
>
> One of the men in the house heard one of them say, "Give me a light", and he knew from his accent that they were Northern men so he hid is some trees back of the house.
>
> After the men had been killed they were removed from the office and put in a barn a short distance from the house. It is said that the bloodstains could still be seen on the floors of this barn.

This altercation at Chestnut Grove gained a certain degree of notoriety and was written up in numerous publications, including a small article entitled "Stealing a March" in the April 18, 1863 edition of *Harper's Weekly* (Harper & Brothers 1863:250). According to this reportedly first-hand account written by a Northern soldier:

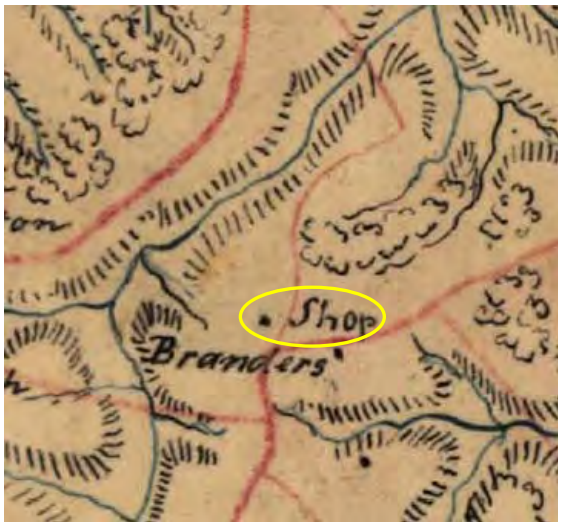
> They were all young men of the neighborhood, who had gone in a body from a local cavalry company into Confederate service. So they were rather petted and made much of by the families around, especially by the young ladies. The sergeant had been particularly attracted by a daughter of Dr. Golding, the gentleman at whose place the party was posted…At last, as the hands of the clock drew round toward twelve the merry party broke up, the last words of Miss Golding being a jocular warning to take care or the Yankees would catch them. It was answered by a defiant laugh, and the sergeant retired with his men to their quarters in an adjoining office. There was a formal watch kept; but, at such a distance from the enemy, the young men had grown very careless…Just as I touched the door it was opened from within, and I was face to face with a gray back. Before I could even say Surrender! He had sprung back, run along the passage and dashed through a side door. For a moment I was bewildered by finding the passage where I expected the room, but recovering myself I followed in time to see him making for a pile of arms. 'Surrender!' shouted I; and without my really meaning it my pistol went off. He spun round, saying, 'You have shot me, Sir,' but I did not have time to attend to him, for all around the room were his comrades lying down. I spring at the nearest, had my knee on him, my breast on another, and my pistol at the head of a third at the same instant. Just then my men got round to the window, and seeing me apparently struggling with numbers, let fly a couple of shots. Unfortunately both were fatal, one man being killed, and another mortally wounded. My man only had a bullet through his arm. Of course the rebels immediately surrendered, and we found that the party consisted of seven. The wounded man was a nephew of Dr. Golding, and had been one of the party in the parlor. I immediately sent a message to Dr. Golding requesting him to come and attend upon his wounded nephew. At the same moment a

> series of most piercing shrieks rang out from the main building, each woman doing screaming enough for six. I sent a second envoy to the Doctor, informing him that if he did not come at once I should have to bring him, together with a polite request for the cessation of that very loud and disagreeable noise. Both messages were effectual. We had the arm of the slightly wounded prisoner dressed at once; and while some of my men found and saddled the horses of the party, the rest of us assisted in ministering to young Broadus, who, as a short inspection proved, was dying. It was the first time that we had looked upon the results of our work, and it made us very melancholy to contemplate the agony of that fine young fellow.

From an entirely different perspective was the story told by Daisy Turner, granddaughter of a Gouldin slave, who recounted details from the version of the tale as she had heard it, "The white Yankee soldiers went to get food and everything they could—horses and their harnesses, carriages and things from the plantation…The soldiers were all ransacking the Gouldin place. They looted the mansion and the smoke house and the milk house" (Beck 2012). Such stories and various perspectives were most likely not uncommon in Caroline County during the war.

Also in 1863, Thomas W. Gouldin's father, John "Jack" Gouldin, died and in his will, John Gouldin specified that his son, Thomas, would receive two tracts (see Tract 33) from his estate along with other lands, "in consideration of the tract on which he now resides & which he bought of Mr. Henry Kidd the right and title to which he is to make to my Estate when he gets possession of the Buckner & Merryman tracts at the division of my property," (CRHC file #2004-040-246-028). The tract on which Thomas W. Gouldin was residing in 1863 contained Chestnut Grove and modern-day Tract 203. At some point between 1863 and 1870, Dr. Thomas W. Gouldin left Chestnut Grove and moved to Linden (Tract 1) as a result of his father's will, which took the Chestnut Grove farm, but gave him other properties in return (Linden on Tract 1, Maywood on Tract 33 as well as the Buckner tract).

In 1864, the location of Chestnut Grove is marked on the Gilmer map. However, it is not associated with a family name, despite the fact that the property had been deeded to John Gouldin's estate. Instead, it is labeled as a "Shop," which would have indicated a mercantile establishment. This evidence is suggestive that after the unpleasant events of 1863, Thomas Gouldin moved to Linden and a shop was set up at Chestnut Grove, although corroborating evidence for that theory is lacking.



Map 44. The 1864 Gilmer map of Caroline County showing the location of Chestnut Grove labeled as a "Shop," meaning a mercantile establishment.

There is a break in the chain of title from *ca*. 1864 and the last known occupation to 1890. After 1890, Anthony Sale moved from his farm in the Woodford area to Chestnut Grove, which he had purchased (Fall 1989:372). In 1900, Anthony J. Sale was enumerated with his family in the census. He was listed as a 57-year old head of head of household and a farmer who owned his farm free and clear. His wife was 47-year-old Emma E, to whom he had been married for 25 years. Their family consisted of sons Silus J. (23), Clarence M. (12) and Floyd F. (10), as well as daughter Cassie W. (17). All of the Sale children attended school during the year except the oldest son, Silus (also spelled Silas), who was listed as a merchant (U. S. Census 1900). On February 15, 1906, Silas J. Sale became the third postmaster at Corbin (Fall 1989:109), which is situated just outside the modern boundaries of FAPH. The distance from Corbin to what became known as Sale's Corner (the intersection of State Routes 612 and 614 where Chestnut Grove is located) was seven miles along Route 612. In 1910, Silas J. Sale lived in Corbin, while his father and mother stayed on at Chestnut Grove. At that point, all of the Sale children had married and left home. Anthony and Emma Sale's household was rounded out by 26-year old Benjamin C. Jones, who undoubtedly helped on the farm (U. S. Census 1910). In 1911, Anthony Sale was the owner of Chestnut Grove, which he still farmed. In 1916, Anthony Sale continued to farm the Chestnut Grove property on modern-day Tract 203 (Fall 1989:321). On May 23, 1918, Anthony Sale sold the 256-acre Chestnut Grove property to his son, Silas J. Sale, son-in-law, S. C. Thomas [also known as Silas C. Thomas and Coleman S. Thomas] and daughter, Cassie Thomas (CC DB 86:596). Although Silas J. Sale was part owner of Chestnut Grove, he lived in Corbin. In 1920, Coleman S. Thomas, a 33-year old head of household, lived at Chestnut Grove with his wife, 32 year old Carrie Thomas (nee Sale), their eight-year-old daughter Madeline, and their 13-year-old adopted daughter, Edmonia Wilcher (U. S. Census 1920). By 1930, the Thomas family had moved to Fredericksburg (U. S. Census 1930), which suggests that Chestnut Grove was rented out to tenants.

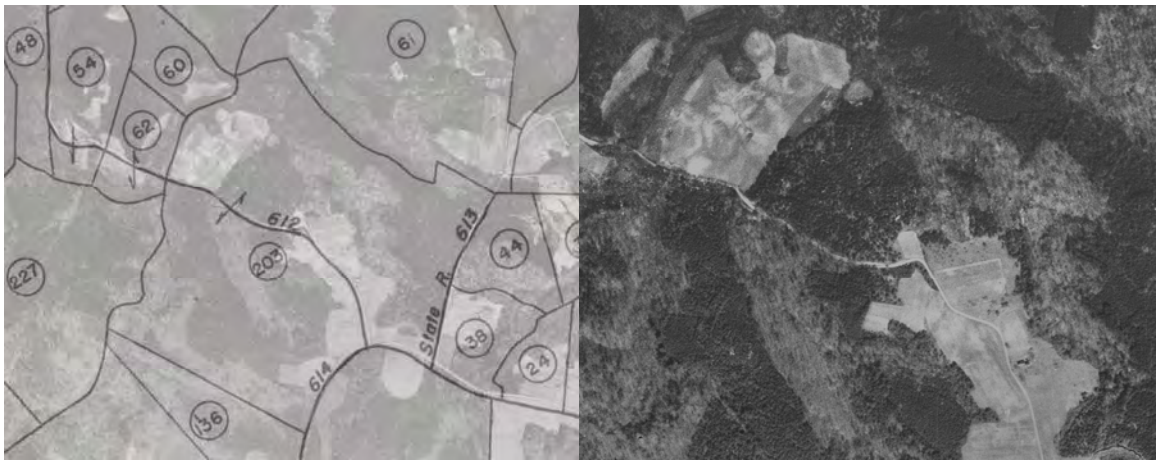
In 1937, Chestnut Grove was recorded by Selma Farmer as part of the Works Progress Administration's Historical Inventory Project in Virginia (HIPV) (CRHC file 1999-006-003-041). She described the house as follows:

> Part of this house is of the three story type, this part has a basement, then two other floors. There are four dormer windows, two on the southside, and two on the northside, on this part. It is also constructed upon a brick foundation. These bricks are laid according to the Common Bond.
>
> Two smaller houses have been joined to this house, forming a long rectangular house. There is a beaded chair rail and baseboard in the central part of the house. There are no chair rails in the other parts but there are baseboards (Farmer 1937b).

Farmer's description of the additions to Chestnut Grove, as well as the several photographs she took, amply illustrate the changes to the property over the years. The hodge-podge expansion of the dwelling reflects changes in function over the years as the house changed from an owner-operated farm to a tenant farm.

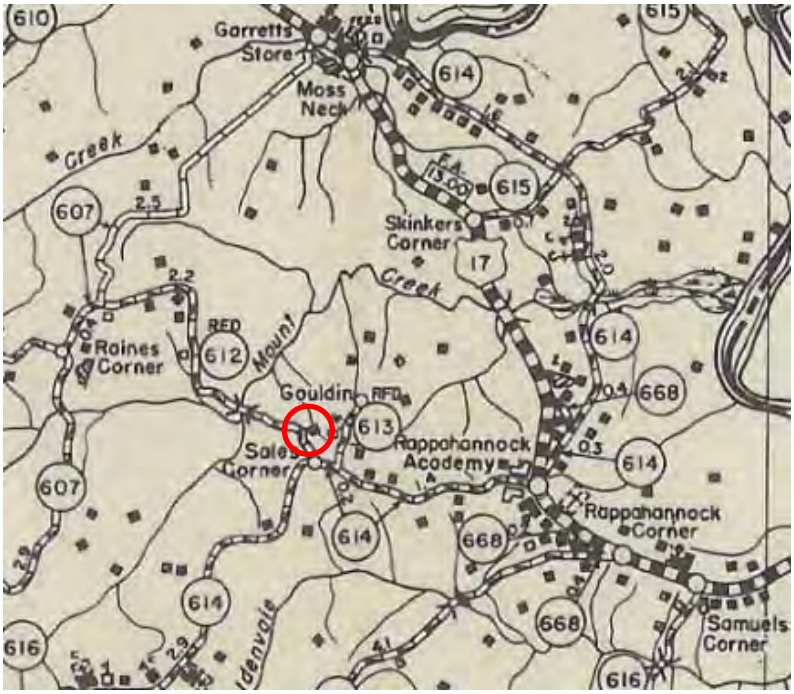
Illustration 15. Chestnut Grove in 1937, showing structural changes (Farmer 1937b).

Also in 1937, the farm at Chestnut Grove was captured on an air photo. The farm was definitely occupied and in use, with two separate portions of the property in cultivation. Again, considering that all of the owners lived elsewhere, the farm must have been rented to tenants.



Map 45. Modern-day Tract 203 (left) and the Chestnut Grove farm (right) in 1937.

In 1940, the now widowed Carrie Thomas still resided in Fredericksburg's Lower Ward, and Silas J. Sale continued as the postmaster at Corbin until his retirement on September 30th of that year (U. S. Census 1940; Fall 1989:109).



Map 46. Portion of the 1940 road map of Caroline County showing the "farm unit, in use" at Sales Corner (Chestnut Grove) on modern-day Tract 203.

On August 12, 1941, S. J. (Silas J.) and Etta M. Sale, who were long-time residents of Corbin, Virginia, along with Cassie S. Thomas, a widow and resident of Fredericksburg, conveyed to the United States government 256 acres in consideration of $3,300 (CC DB 115:77). This property is modern-day Tract 203, which contains Chestnut Grove.

Summary: Occupation on modern-day Tract 203 traces its origins back to Chestnut Grove in 1790, possibly with William Kidd. In time, his grandson, Henry Kidd, appears to have inherited Chestnut Grove. The Kidd family was in occupation until at least 1850. By the 1860s, Dr. Thomas Gouldin purchased Chestnut Grove and lived there with his family. During the Civil War, Chestnut Grove was the scene of an infamous raid by Northern soldiers, who killed three Confederate soldiers, including Gouldin's nephew, Eugene Broaddas. In 1863, Thomas Gouldin's father, John, died. In his will, he executed a land swap, by which Chestnut Grove became part of his estate, and Thomas Gouldin was given several other farms in exchange. Thomas Gouldin moved from Chestnut Grove around that time, and there is a suggestion that a mercantile establishment was set up, although details are lacking. By 1890, Anthony Sale had purchased Chestnut Grove, lived there with his family and farmed the property. His children left the farm, and in 1918, he sold Chestnut Grove to his son, Silas J. Sale (postmaster in Corbin), and daughter Carrie Thomas (a Fredericksburg resident). After that, Chestnut Grove continued to be occupied and cultivated, but by unknown tenants until acquisition in 1941.

Tract 221 (Map Sheet 2, Quad E10)

Occupation History: Inspection of the 1937 aerial photo shows a large farm complex, known as Spring Garden, with a long entrance lane to a large residence and a number of other outbuildings/barns/structures in this roughly rectangular tract in Caroline County. In 1941, the government acquired the property for $17,250.00 as Tract 221, which encompassed 422.4 acres. The farmstead structures and surrounding open/cultivated land were noted in the northeastern quadrant of the tract on the aerial photo. The remainder of the tract is forested. Archival and archaeological evidence have also pinpointed a Civil War encampment on modern-day Tract 221.

Evidence suggests that the history of settlement on modern-day Tract 221 begins with the Royston family. For a discussion of that family's history and land ownership within Fort A. P. Hill, see Tract 183. In brief, Richard Royston (Tract 520), was the brother of Joanna Royston, who married Robert Green Holloway, Sr. According to the evidence, the land on which modern-day Tract 221 is situated was "part of the tract of which the late Richard Royston died seized" (CRHC file #2004-040-273-010). From at least the 1830s, it appears that Richard Royston owned the land where modern-day Tract 221 is situated (along with other lands); although he did not live there, nor does it appear to have been previously improved.

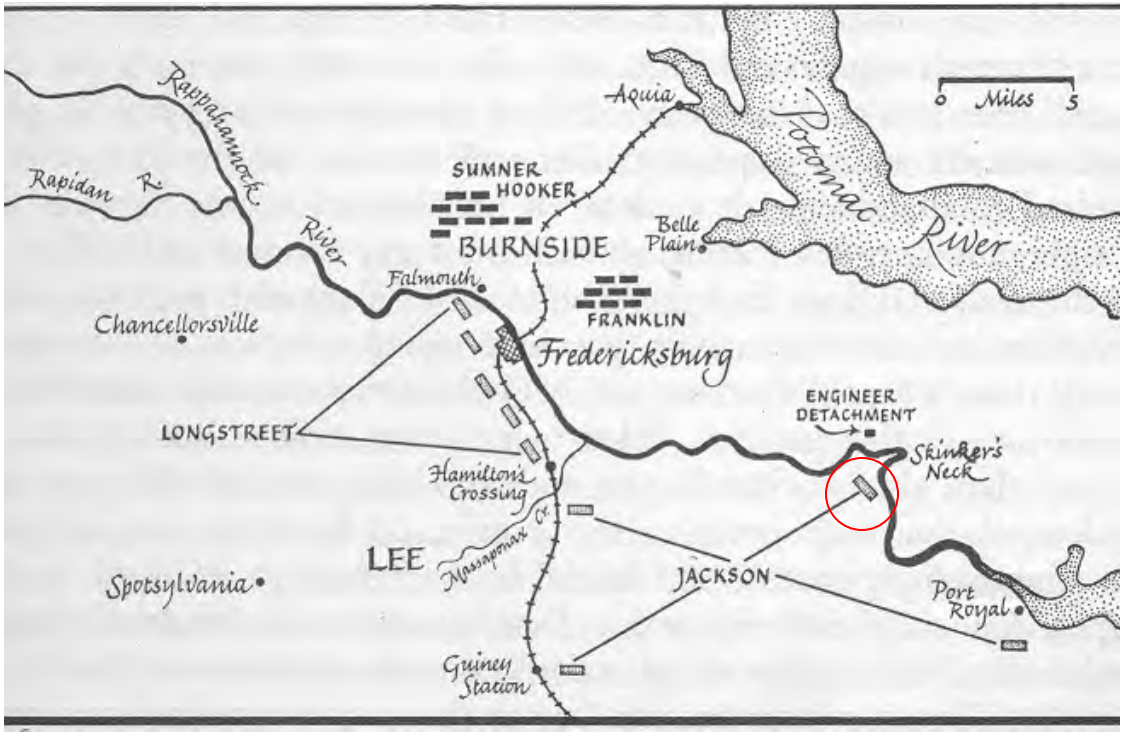
The history of actual occupation on Tract 221 began with the construction of the house known as Spring Garden. According to historian Farmer (1937f), "This house was built about 1830." Although historian Farmer (1937f) noted that, "the first owner of this house cannot be learned," evidence suggests that the first occupant was Robert Green Holloway, Sr. and his wife Joanna (nee Royston), who appeared in the 1830 census as residents in Caroline County, presumably at Spring Garden (U. S. Census 1830). Although the Holloways were in occupation, Joanna's brother, Richard Royston, actually owned the land. On November 11, 1832, Robert Green Holloway, Jr. was born to the couple at Spring Garden (Massey 2009), which means the family was in occupation in

the house on modern-day Tract 221. Reportedly, "Originally this house was of the one and one-half story type, with dormer windows" (Farmer 1937f). In 1840, Robert G. Holloway (Sr.) continued to be enumerated in Caroline County (U. S. Census 1840). Although the deed was not located, evidence suggests that some time in this period, Robert Holloway, Sr. purchased the 411-acre farm from Richard Royston (CRHC file #2004-040-025-2001-2). It is unclear when Robert Holloway, Sr. died, but after 1840, he no longer appears in the census records with his family, suggesting his death occurred at some point after 1840.

In 1850, the Holloway family was still in residence at Spring Garden on modern-day Tract 221. The household was headed by Joana Holloway (57), who was a widow by this point. She owned real-estate valued at $3,704. Her son, Thomas R. (33), was listed as a farmer, and evidence suggests he ran the sizeable operation at Spring Garden. The household also contained the three Holloway daughters: Virginia (20), Lucretia H. (15) and Mary (13), all of whom attended school during the year. The last member of the household was Robert G. (18), who was a student (U. S. Census 1850). The school that Robert Green Holloway, Jr. attended was Rappahannock Academy and Military Institute (Tract 20), which was "one mile distant from Spring Garden" (Massey 2009). Also in 1850, Joana Holloway was enumerated as the owner of 31 slaves, ages ranging from one to sixty-three, both male and female (U. S. Census 1850, slave schedule). This constituted a sizable work force, which suggests substantial agricultural production at the Spring Garden farm. Between 1854 and 1856, Robert Holloway, Jr. was away at medical school and upon completion he returned to Spring Garden and began his medical practice (Massey 2009).

In 1860, Joanna Holloway (67) was still the head of household, and her children Robert G. (24), Virginia (26) and Mary (21) still lived at home. Dr. Robert Holloway appears to have been using Spring Garden as the base from which he practiced medicine. With the onset of the Civil War, many things changed at Spring Garden, as they did all across Caroline County and further afield. In 1861, Dr. Holloway volunteered for medical service to the Confederacy, which prompted his departure from Spring Garden in 1862 (Massey 2009).

As was the case of many of the nearby Gouldin family properties to the north and east of Spring Grove (see for example Tracts 1, 33, 61 and 203), Confederate troops from Jackson's division camped on the Spring Garden property during the winter from December 1862 to April 1863, after the Battle of Fredericksburg (Blake *et al.* 2009).



Map 47. Map from Foote (1963:23) showing locations of Jackson's Divisions, notably in the area of Skinker's Neck.

In Blake (2009:27) there is a description of life in a Confederate camp in the vicinity of Spring Garden. Martin D. Koiner of the 52nd Virginia Infantry wrote his brother on February 8, 1863 from the camp near Rappahannock Academy:

> *Our regiment goes on picket tomorrow again. We are a fasting today and will remain so until tomorrow evening when we draw rations again. We ate our last weeks rations and bought a gallon of meal besides & had but one pitiful cake for breakfast which was not a snatch for five of us. There was a black boy here this morning. He said he would try and bring us some meal this evening. It will cost us a dollar a gallon. We can buy plenty of ginger bread but it is too dear. They sell for 50 cents a cake* (BV 140).

Another entry could possibly describe the site at Spring Garden, considering its proximity to Rappahannock Academy. Blake (2009:30) notes that William R. Tanner of the 13th South Carolina Infantry, Company C wrote in a letter to his cousin on December 17, 1862:

> *….Monday the 8th of December … we were camped near what has once been a fine academy about four miles from Port Royal on the Rappahannock River. That morning very early four Companies of the Regiment were ordered to go on picket. Accordingly, we bundled up and marched about four miles. There we formed and relieved the picket. Two companies were put on post, the others left about a mile in rear on reserves. During the day, we worked on entrenchments a little* (BV 29).

Historian Farmer (1937f) also noted that, "old coins used during the War Between the States…have been found on this farm." Not surprisingly, the archaeological remains of "Civil War huts" have been recorded on modern-day Tract 221, and were assigned the trinomial 44CE405 (Blake 2009:25).

Map 48. Map showing location of Civil War encampment (44CE405) on modern-day Tract 221, along with location of the remains of Spring Garden (44CE478).

During the remainder of the war, Dr. Holloway was in medical service away from home for a majority of the time (Massey 2009). Little is known about life at home at Spring Garden during this period, other than to assume that the remaining Holloway family members did their best to weather the storm. A glimpse of that life came from informant Lelia Lewis, granddaughter of Dr. Holloway. She recalled a family story of burying valuables to safeguard them during the Civil War: "Oh, yes…three times our silver was buried, and china. I have one piece of the old china that's broken downstairs. But they buried that three times. Let's see. Now, that was at Spring Garden" (Allen and Lewis 2007). In 1864, Spring Garden did not appear on the Gilmer map. This absence is notable and unexplained. Even if the house had been abandoned or if the Holloways went to stay elsewhere, such a sizable house would have been noteworthy. Dr. Holloway returned to his family at Spring Garden in 1865 (Massey 2009).

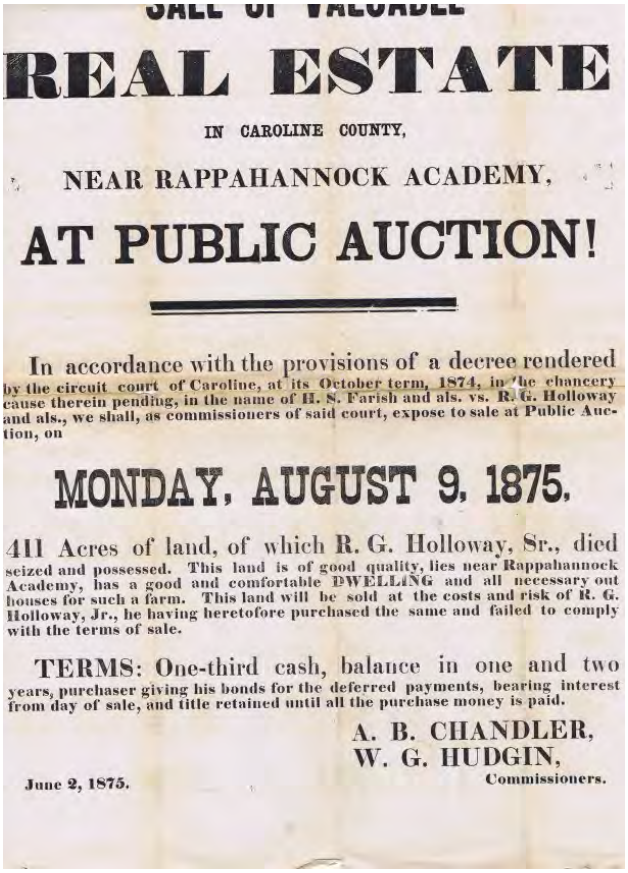
Map 49. 1864 Gilmer map showing the area of modern-day Tract 221.

After the war, the people of Caroline County attempted to return to normal, though it was a new normal. The Holloways had some changes of their own. In *ca*. 1868, Dr. Holloway married his cousin and long-time fiancée, Lilie Spidle Amiss (Massey 2009). As his granddaughter, Lelia Lewis recalled, "They were married right after the Civil War…–they were cousins by marriage. His mother was a Royston, and they were cousins by marriage, my grandmother. They weren't blood kin, but they were cousins by marriage, and he called her 'my cousin. They had a big family, Grandmother had at Spring Garden, there was my dad and my uncle and my aunt, the one I'm named after, was born at Spring Garden" (Allen and Lewis 2007). Dr. Holloway returned to his medical practice, based at Spring Garden on modern-day Tract 221. The following year, his sister Virginia Holloway married Hazelwood S. Farish, son of Clementina and George B. Farish (CRHC file #2004-040-055-033), and left home.

Joanna Holloway's slave labor force was gone but her farm remained, which would have required a change in how it operated. It is possible that it was in this period that David T. Bullock worked at Spring Garden. According to his own deposition, he was "well acquainted with it [Spring Garden], having managed on said farm one year" (CRHC file #2004-040-252-001-8). The 1870 census revealed some of these changes in the Holloway household at Spring Garden. That year, Dr. Robert Holloway (37) had become the head of household along with his wife, Lillis (24), daughter Lelia (2), widowed mother Joanna (81), and spinster sister Mary (29). The household also included a number of non-family members. Instead of slaves, brothers Richard (20), Willie (14) and Thomas (12) Massey, who were all white, would have tended to the farming. Ida Carroll (14, white), Jane Brown (20, black), and Jane Clark (10, black), would have tended to the household (U. S. Census 1870). Considering the practice of former slaves

remaining as employees on the farms where they had previously lived in enslavement (Wingfield 1924:167), it is possible that Jane Brown might have been the single one-year-old black female slave owned by Joanna Holloway in 1850. However, considering the anonymity of the slave schedule records, her identity cannot be confirmed (U. S. Census 1850, slave schedule).

Joanna Holloway died on Christmas day of 1872 (CRHC file #2004-040-025-2001-5), and the rest of the Holloway family continued to live at Spring Garden. Joanna Holloway might have even been buried there, along with Robert Green Holloway, Sr. in the "old graveyard near this house" (Farmer 1937f). Evidence suggests that when Robert Green Holloway, Sr. and Joanna Holloway died, they did not leave wills because the Spring Garden property was set to be sold by Special Commissioners of the Caroline County Court. Those commissioners, W. G. Hudgins and A. B. Chandler, had agreed to sell Spring Garden "to R. G. Holloway at the price of $8.00 per acre, aggregating the sum of $3,288—one third to be paid cash & the balance in two equal annual installments" (CRHC file #2004-040-025-001-3). By 1874, Dr. Holloway had not fulfilled the conditions of the sale. The property was described as "411 Acres of land, of which R. G. Holloway, Sr., died seized and possessed. This land is of good quality, lies near Rappahannock Academy, has a good and comfortable DWELLING and all necessary out houses for such a farm" (CRHC file # 2004-040-025-2001-2). However, according to the circuit court of Caroline County in October 1874 in the case between Dr. Holloway and his brother-in-law, H. S. Farish, "R. G. Holloway, Jr., [had] purchased the same and failed to comply with the terms of sale" (CRHC file # 2004-040-025-2001-2). Therefore, on August 9, 1875, the Spring Garden farm on modern-day Tract 221 was put up for auction.



SALE OF VALUABLE

REAL ESTATE

IN CAROLINE COUNTY,

NEAR RAPPAHANNOCK ACADEMY,

AT PUBLIC AUCTION!

In accordance with the provisions of a decree rendered by the circuit court of Caroline, at its October term, 1874, in the chancery cause therein pending, in the name of H. S. Farish and als. vs. R. G. Holloway and als., we shall, as commissioners of said court, expose to sale at Public Auction, on

MONDAY, AUGUST 9, 1875,

411 Acres of land, of which R. G. Holloway, Sr., died seized and possessed. This land is of good quality, lies near Rappahannock Academy, has a good and comfortable DWELLING and all necessary out houses for such a farm. This land will be sold at the costs and risk of R. G. Holloway, Jr., he having heretofore purchased the same and failed to comply with the terms of sale.

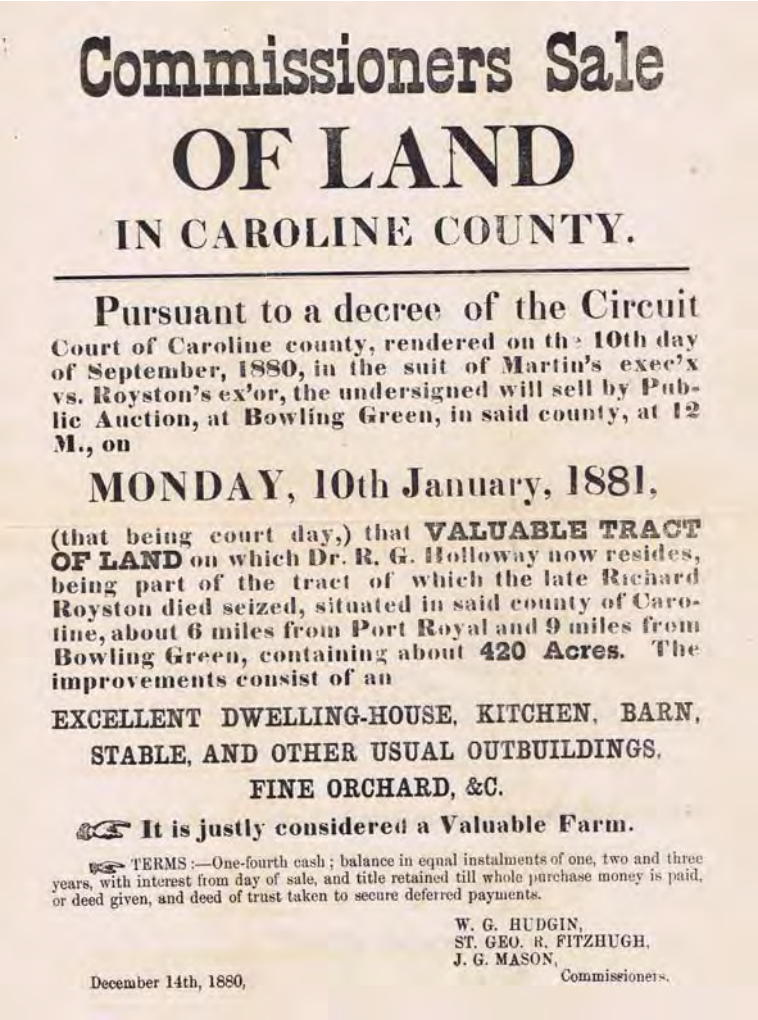
TERMS: One-third cash, balance in one and two years, purchaser giving his bonds for the deferred payments, bearing interest from day of sale, and title retained until all the purchase money is paid.

A. B. CHANDLER,
W. G. HUDGIN,
Commissioners.

June 2, 1875.

Illustration 16. 1875Auction poster (CRHC file # 2004-040-025-2001-2).

At this auction, Dr. Robert G. Holloway was the highest and successful bidder, thus maintaining his family's occupation at Spring Garden (CRHC file #2002-040-0273-010-2). In 1877, Robert Green Holloway was listed as both the physician for the community of Rappahannock Academy, as well as a principal farmer in the area with 420 acres (Fall 1989:320). Despite his success, the family's tenure would soon come to an end. Ownership of the Spring Garden farm was again challenged in 1880 when suit was brought in the Caroline commissioner's court against the executor of Richard Royston's estate. As a result of their ruling, Spring Garden was put up for auction on January 10th, 1881. It was described as a "VALUABLE TRACT OF LAND on which Dr. R. G. Holloway now resides, being part of the tract of which the late Richard Royston died seized, situated in said county of Caroline, about 6 miles from Port Royal and 9 miles from Bowling Green, containing about 420 Acres. The improvements consist of an EXCELLENT DWELLING HOUSE, KITCHEN, BARN, STABLE, AND OTHER USUAL OUTBUILDINGS, FINE ORCHARD, &C. It is justly considered a Valuable Farm" (CRHC file #2002-040-0273-010-2). After the sale of Spring Garden, the Holloway family moved to Locust Grove and renamed it Ridgeway (see Tract 183).



Commissioners Sale

OF LAND

IN CAROLINE COUNTY.

Pursuant to a decree of the Circuit Court of Caroline county, rendered on the 10th day of September, 1880, in the suit of Martin's exec'x vs. Royston's ex'or, the undersigned will sell by Public Auction, at Bowling Green, in said county, at 12 M., on

MONDAY, 10th January, 1881,

(that being court day,) that VALUABLE TRACT OF LAND on which Dr. R. G. Holloway now resides, being part of the tract of which the late Richard Royston died seized, situated in said county of Caroline, about 6 miles from Port Royal and 9 miles from Bowling Green, containing about 420 Acres. The improvements consist of an

EXCELLENT DWELLING-HOUSE, KITCHEN, BARN, STABLE, AND OTHER USUAL OUTBUILDINGS, FINE ORCHARD, &C.

It is justly considered a Valuable Farm.

TERMS:—One-fourth cash; balance in equal instalments of one, two and three years, with interest from day of sale, and title retained till whole purchase money is paid, or deed given, and deed of trust taken to secure deferred payments.

W. G. HUDGIN,
ST. GEO. R. FITZHUGH,
J. G. MASON,
Commissioners.

December 14th, 1880,

Illustration 17. 1881 Auction poster (CRHC file #2002-040-0273-010-2).

W. R. Sale was the successful bidder at the 1881 auction, and became the owner after the Holloway family left (Farmer 1937f). According to historian Fall (1989:320), in 1884, W. R. Sale was listed as a merchant in Rappahannock Academy. It is unclear if his mercantile establishment was located at Spring Garden or elsewhere. In 1888 and 1890, W. R. Sale was instead listed as a principal farmer in Rappahannock Academy, reflecting his occupation and cultivation of the Spring Garden farm (Fall 1989:320-321). Because the 1890 Federal Census was destroyed in a fire (Blake 1996), no additional census data is available on the W. R. Sale household. W. R. Sale sold the Spring Garden farm to T. H. Motley (his brother-in-law), followed in short succession by the sale of Spring Garden to J. W. Broaddas (again related by marriage) (CRHC file #2004-040-064-107 & #2004-040-085-077, Farmer 1937f).

In 1900, John W. Broaddus and his family lived at Spring Garden on modern-day Tract 221. He was the 66-year-old head of household who owned the farm free and clear. His family consisted of his wife of nine years, Dora E. (45), who was step-mother to Lucy T. (28) and Gouldin L. (18). Broaddus' grandson Frank B. Motley (4) also lived at Spring Garden. Lucy was employed as a teacher and Gouldin worked as a farm laborer

(U. S. Census 1900). On October 12, 1905, Gouldin Broaddus bought Spring Garden from his father (CC DB 72:346), and retained ownership until acquisition.

In 1907, Gouldin Littleton Broaddus married Mabel Clair Pitts, daughter of George H. and Virginia Pitts (CRHC file #2004-040-093-010). They lived at Spring Garden and started a family there. In 1910, Gouldin Broaddus (29) lived and farmed at Spring Garden on modern-day Tract 221. He was joined by his wife, Mable (25) and their children, Virginia (1) and William (2 months). Also living on the farm working for the family were Bernard Hawes (18) and Lizzie R. Bowfare (12), both mulatto (U. S. Census 1910). In 1917, Gouldin remodeled Spring Garden. The original dormer windows were taken off and the house was made into a two story building. It was reportedly the second time the house had been renovated (Farmer 1937f). By 1920, the Broaddus family was still in occupation at Spring Garden on modern-day Tract 221, although the composition of the household had changed. Goulden L. Broadus (38) remained the head of household along with his wife Mabel (35) and their many children: Virginia G. (11), Henry (9), Frank (7), Laura (5) and Herbert (3) (U. S. Census 1920). This household composition reflects the addition of many more children, but no hired, non-family members in the household. With a farm as large as Spring Garden at over 400 acres, hired farm workers would have been necessary, and might have either been drawn from the local community or living in tenant accommodation on the farm.

In 1937, Spring Garden was recorded by Selma Farmer as part of the Works Progress Administration's Historical Inventory Project in Virginia (HIPV) (CRHC file 1999-006-003-211). Farmer's informant was "Mr. G. L. Broaddus, the present owner and occupant" (Farmer 1937f). She recorded a detailed description of the house:

> This is a rectangular, frame building, with cellar. It has a hip roof covered with metal. There are four chimneys on the house; two on the east, one of the west and one on the south side of the house. The weatherboarding is of pine and is plain. There are plain wooden cornices on the house.
>
> There are twenty-five windows in the house. Some of the panes are 8 x 10; these are of the six pane sash type; others are 12 x 24 and are of the two pane sash type. There are blinds on some of the windows but not on all.
>
> There are three porches here, one on the east, one on the west and one on the north side. These porches are rather small and have very small columns supporting them. The front door is wide and two-panelled.
>
> There are eight rooms in the house, two halls, and one room in the cellar. The approximate ceiling height of these rooms is twelve feet.

The stairway here is of the enclosed type. The doors are of pine wood and are of the double cross "T" type. The walls are plastered and several of them are painted.

The "HL" hinges are on one door, on the other doors the common type locks and hinges are used. There are five mantels here, four of them are hand-made. All of them are very plain (Farmer 1937f).

Illustration 18. Spring Garden in 1937 (Farmer 1937f).

Also in 1937, the Spring Garden farm was captured on an aerial photo, which clearly depicts the well-developed farmstead with the main house at the end of a long driveway fronting from Route 614, along with its many farm outbuildings.

Map 50. Tract 221 (left) and Gouldin Broaddus's farm at Spring Garden in 1937.

In 1940, the Caroline County road map showed Spring Garden as a, "farm unit, in use" near the community of Rappahannock Academy. That year, the family was enumerated at Spring Garden on "Highway 614." Gouldin Broaddus (58) was the head of household, who owned his own farm valued at $2,500. The census specified that he operated his "own dairy farm." The rest of the household consisted of Gouldin's wife, Mabel (55), daughters Virginia (31) and Mary (20), and son Herbert (23), who was a farm laborer (U. S. Census 1940).

Map 51. Portion of the 1940 road map of Caroline County showing Spring Garden on modern-day Tract 221 as "farm unit, in use."

On September 18, 1941, Gouldin L. and Mabel P. Broaddus conveyed the 422.4-acre Spring Garden farm to the United States government for $17,250.00 (CC DB 115:324). This conveyance brought to an end a farm that had retained its original size and configuration for over one hundred years. Informant Lelia Lewis reported that the house, "was reserved as officers' quarters when the A.P. Hill took over" (Allen and Lewis 2007).

Summary: The history of occupation on modern-day Tract 221 began with land that belonged to Richard Royston in 1830. His sister, Joanna, married Robert Green Holloway, Sr., who built the house known as Spring Garden. They were the first occupants of the home, where their son Robert Green Holloway, Jr. was born in 1832. The elder Holloway purchased the land from Royston, but died at some point after 1840. His widow, Joanna, continued to live at Spring Garden, and her eldest son took over as the main farmer. Joanna had a slave labor force numbering 31 in 1850, which suggests high levels of agricultural production at the farm. While growing up at Spring Garden, Robert Jr. attended school first at nearby Rappahannock Academy and then medical school in the 1850s, which took him away from home. Upon his return from medical school, Dr. Holloway began practicing medicine with Spring Garden as his base of operations. With the onset of the Civil War, Joanna Holloway and her daughters remained at Spring Garden while Dr. Holloway served with the Confederacy in a medical capacity. In the winter of 1862-1863, Confederate soldiers camped on the southeastern portion of the Spring Garden farm. After the war, Dr. Holloway married, brought his bride to Spring Garden where they started a family and continued to farm with hired labor. Joanna Holloway died in 1872, and at some point prior to 1874, Dr. Holloway had arranged to purchase Spring Garden from the family. However, he did not fulfill the conditions of the purchase and as a result of a suit brought by his brother-in-law, Spring Garden was auctioned in 1875. Dr. Holloway was able to purchase the farm and stayed on until 1880, when his ownership was again challenged by a suit against the executors of Richard Royston's estate. When the Caroline County Commissioner's Court once again put Spring Garden up for sale, Dr. Holloway moved his family to Locust Grove (Ridgeway). W. R. Sale purchased Spring Garden at auction in January of 1881, who then sold it to his brother-in-law Thomas H. Motley by 1890, who in turn sold it to a family member, John W. Broaddus. In 1905, Broaddus sold the Spring Garden farm to his son, Gouldin Broaddus, who raised a large family there, ran a dairy farm, and retained ownership until acquisition by the United States government in 1941, thus ending over 100 continuous years as an intact farm.

Tract 233 (Map Sheet 4, Quad D3)

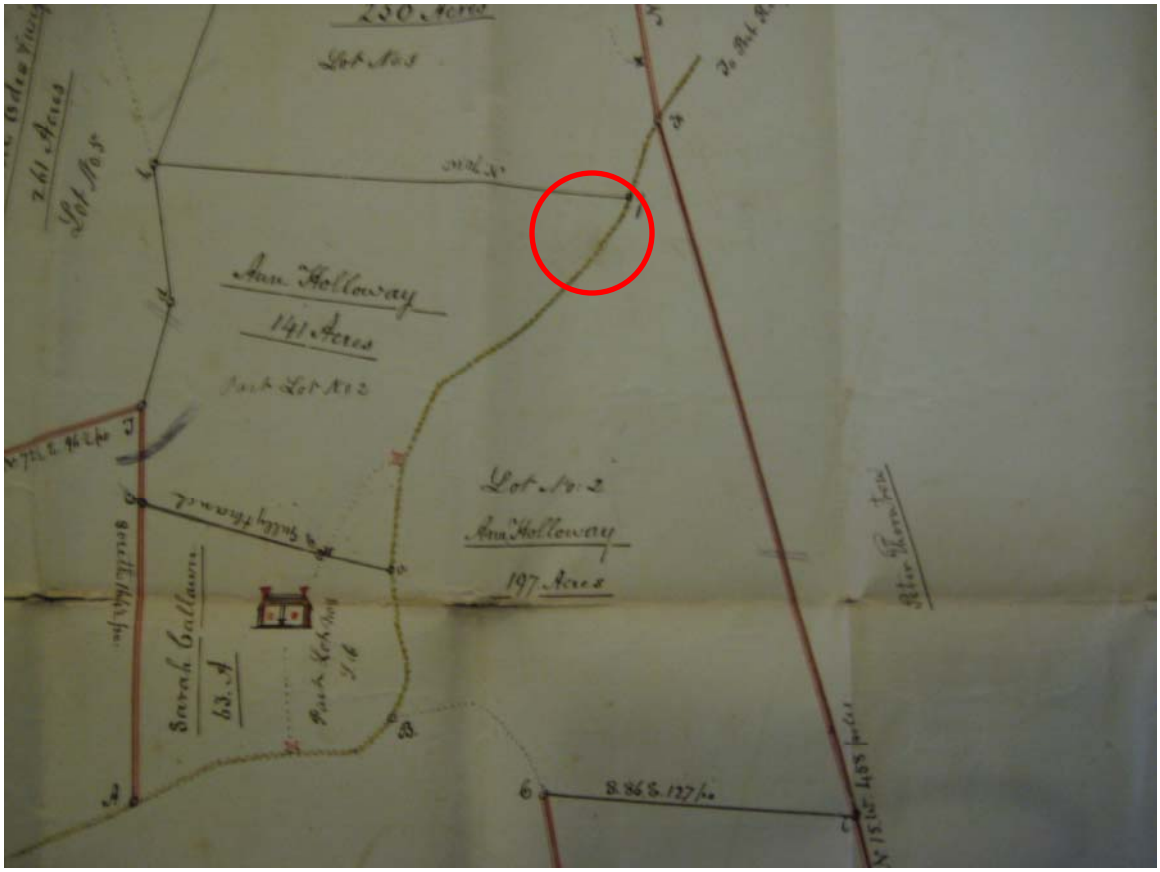
Occupation History: Inspection of the 1937 aerial photo shows occupation in this very small, triangular tract in Caroline County. In 1941, the government acquired the property through condemnation in the District Court of the United States for the Eastern District of Virginia, Miscellaneous case No. 1572-M (CC DB 115:211), as Tract 233, which encompassed 1.2 acres. Only one occupation was noted within the tract on the aerial photo.

The documentation of occupation on Tract 233 is both fragmented and intriguing. It begins in 1700, with a farm known as "Bloom's Grove." Thomas F. Royston is probably best known as one of the founders of Fredericksburg, who, along with John Buckner, received a royal patent for 2,000 acres of land in 1671, on which the town was later laid out (Embrey 1994:50). Somewhat lesser known was that Royston was actually a resident of Caroline County at a farm called "Bloom's Grove," where he built a house *ca*. 1700 (Central Rappahannock Heritage Center File folder #2007-028-P-003-005, hereafter cited as CRHC). Although Tract 233 did not contain Royston's house (see history of Tract 323), it was a portion of the farm property (CC DB 61:323).

All of the deeds required to track the chain of title for Tract 233 were not located. However, it was possible to construct a fairly complete land history using other documents. Evidence suggests that Thomas F. Royston, Sr. occupied Bloom's Grove full time as his primary residence. According to an informant, "From him [Thomas F. Royston] it [Bloom's Grove] passed into the hands of a family named Collawn [spelled elsewhere as Callawn]" (CRHC #2007-028-P-003-005). On his death in 1815, Thomas Royston, Jr. inherited the Bloom's Grove property from his father. On November 16, 1838, Thomas Royston and his wife Susan conveyed 636 acres to William Collawn, Sr. for $3,180.00. The property was described as being situation on "Pumands end run," adjoining lands owned by Collawn, Boulware and Richard Royston. In this transaction, Thomas Royston, Jr. reserved the rights to the "white family burying ground" on the property (CC DB 40:286). This property is Bloom's Grove, and contains the occupied portion of modern-day Tract 233.

By September 1855, a portion of Bloom's Grove farm, including the location of modern-day Tract 233, plus other property, was included in the estate of William Callawn (Callawn vs. Callawn 1857, CRHC unindexed file of Caroline County Chancery Court Ended Papers). William Callawn died intestate and his estate was divided by the Chancery Court. Callawn's estate contained a total of 1,828 acres in two tracts or parcels, including one of 1,479 acres that included modern-day Tract 233. Callawn's estate was distributed among seven heirs (all over the age of 21), including his widow Elizabeth (who received her widow's dower), four of his children, one son-in-law and one granddaughter, who all received equal shares of the property.

Notable among Callawn's heirs was Ann E. Holloway. She was the only child of Ann Callawn, who married John Holloway, both of whom were dead by 1855. Their own estate was to be distributed, and as their heir, Ann E. Holloway was entitled to 1/6th of William Callawn's estate (Callawn vs. Callawn 1857). In that distribution, she received Lot No. 2, consisting of a total of 338 acres, separated into parcels of 141 acres and 197 acres situated west and east (respectively) of the "Road from Bowling Green To Port Royal." There are no residences depicted on this property and Ann E. Holloway presumably lived elsewhere, possibly on lands from her parent's estate. She also received seven slaves from William Callawn's estate distribution (Callawn vs. Callawn 1857).



Map 52. Portion of the plat map of the William Callawn Estate, showing Lot No. 2 distributed to Ann Holloway, which includes the location of modern-day Tract 233.

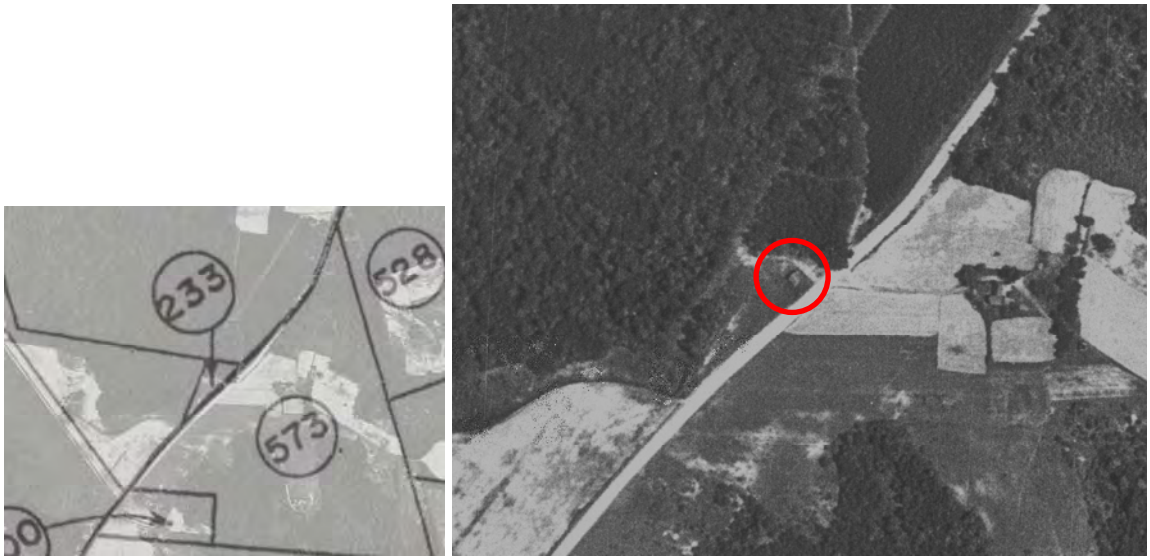
After 1855, it is unclear what Ann E. Holloway did with this property, but it is known that ownership of both Bloom's Grove and modern-day Tract 233 stayed in the Callawn family. On July 1, 1887, W. N. Collawn and his wife, Virginia E., conveyed a small parcel of land to African-American buyer Edward Holmes for the price of $20. The property contained an area of "4,372 yards," and is equivalent to modern-day Tract 233. The deed noted that the parcel was, "a portion of the Farm known as 'Blooms Grove'," and noted that it was located on the main road "from New London to Port Royal." Also, the deed noted that the parcel was located "adjacent to Dr. Holloway," which refers to Dr. Robert Green Holloway's house Ridgeway on Tract 283 (CC DB 61:323).

Despite the long history of ownership for Tract 233, it does not appear that it was occupied previously. Through the entire time, the 1.2 acres was part of larger tracts of land on which occupation was located elsewhere. However, Holmes' purchase of the land in 1887 marked the initial occupation of modern-day Tract 233. Edward Holmes owned no other property and Tract 233 was his primary residence. This residence was situated on County Road 616, five miles east of Mica and one mile southeast of Mt. Olive Baptist Church (CC DR 115:211).

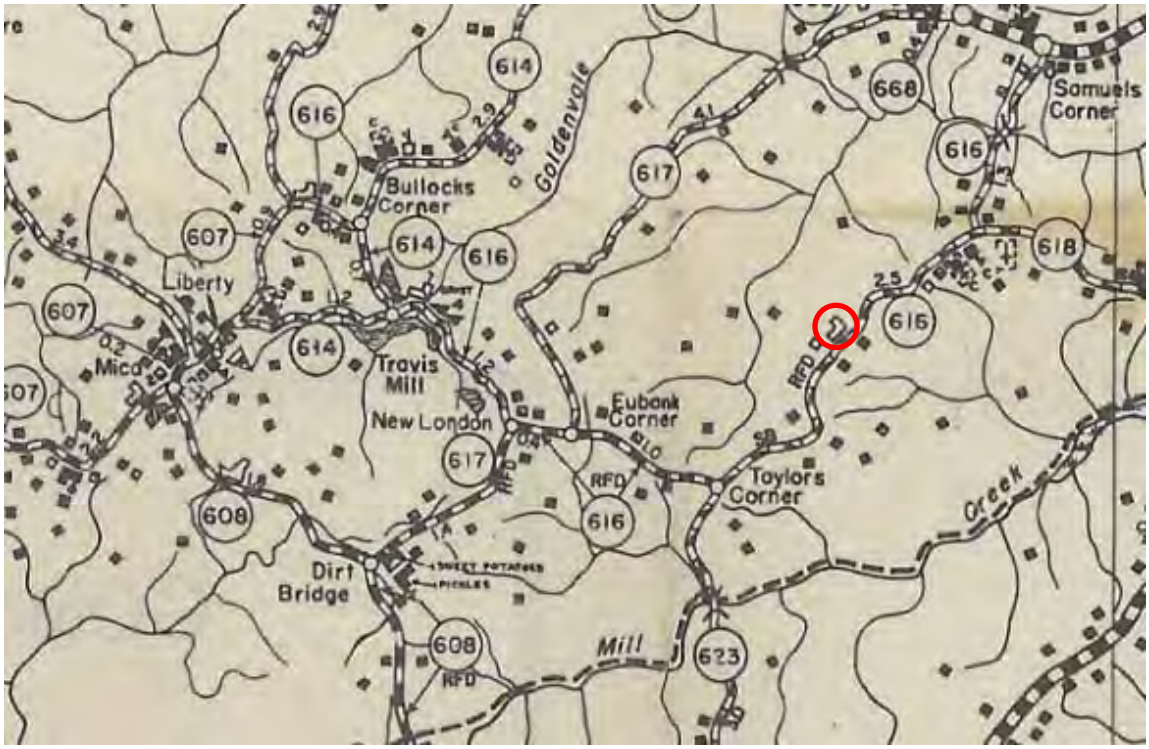
In 1900, the 38-year old Edward Holmes is recorded as living with his daughter Rosa M., age 11, and an 11-year old black male "servant" named Ennis Chorlin. Holmes

is listed as a land-owning farmer who can read and write, and the two children are listed both at school, both being able to read and write (U. S. Census 1900).

Holmes retained the property for the rest of his life, but died at some point prior to acquisition. On the 1937 aerial photographs, a single small structure is visible, the western portion of the property is open but does not appear to be in cultivation, and the remaining eastern portion of the property is in woods. No other structures are visible. On the 1940 road map, the single structure is depicted in the location of Holmes' property, and it is noted as a "store or small business, not in use" rather than a farm or residence. It is possible that Holmes ran a small home-based store or business and lived on the premises as well.



Map 53. Tract 233 (left), and the Edward Holmes home/business (right).



Map 54. Portion of the 1940 road map of Caroline County showing the building on modern-day Tract 233 as "store or small business est., not in use."

In 1941, the United States government acquired the 1.2 acres from Holmes' estate for $30, a slight increase in value over its original purchase price, reflecting the modest improvements made to the property (CC DB 115:211).

Summary: From *ca*. 1700, modern-day Tract 233 was part of Bloom's Grove Farm, owned by Thomas F. Royston, Sr., who willed it to his son, Thomas Royston, Jr., upon the elder's death in 1815. In 1838, the property on which modern-day Tract 233 is located was sold by Thomas Royston, Jr. to William Callawn, Sr. When Callawn's estate was divided in 1855, portions of the Bloom's Grove Farm plus other properties were distributed to his heirs, including his granddaughter Ann E. Holloway. The Callawn family retained ownership of the Bloom's Grove Farm property until 1887, when W. N. Collawn sold the small 1.2-acre parcel out of it to Edward Holmes. There is no documentary or photographic evidence of occupation on Tract 233 prior to 1887. Prior to this time, the 1.2 acres was a small, peripheral portion of much larger land tracts with occupation located elsewhere. After the 1887 purchase, Holmes occupied and improved the land, farming and apparently operating a small business or store in this location as well. The farmstead observed on the 1937 aerial photograph can be attributed to Edward Holmes, spanning from 1887-1941. Despite the existence of a standing structure on Tract 233 at acquisition, it had been abandoned by 1940, possibly earlier, most likely after Holmes' death.

Tract 239 (Map Sheet 4, Quad C2)

Occupation History: Inspection of the 1937 aerial photo shows a single structure in this roughly rectangular tract in Caroline County. In 1941, the government acquired the property for $160.00 as Tract 239, which encompassed 20.8 acres. Only one structure was noted within the tract on the aerial photo, in the central portion of the property with open/cultivated land to the east.

For the history of modern-day Tract 239 from *ca.* 1700 to 1904, see Tract 376, which shares an identical history in that period.

In 1904, Bettie Travis (nee Callawn) owned modern-day Tract 239, having presumably inherited it from her father. Bettie B. and F. M. Travis lived on the lands associated with Travis Lake to the north (see Tract 110), and there is no indication that they were in occupation on modern-day Tract 239.

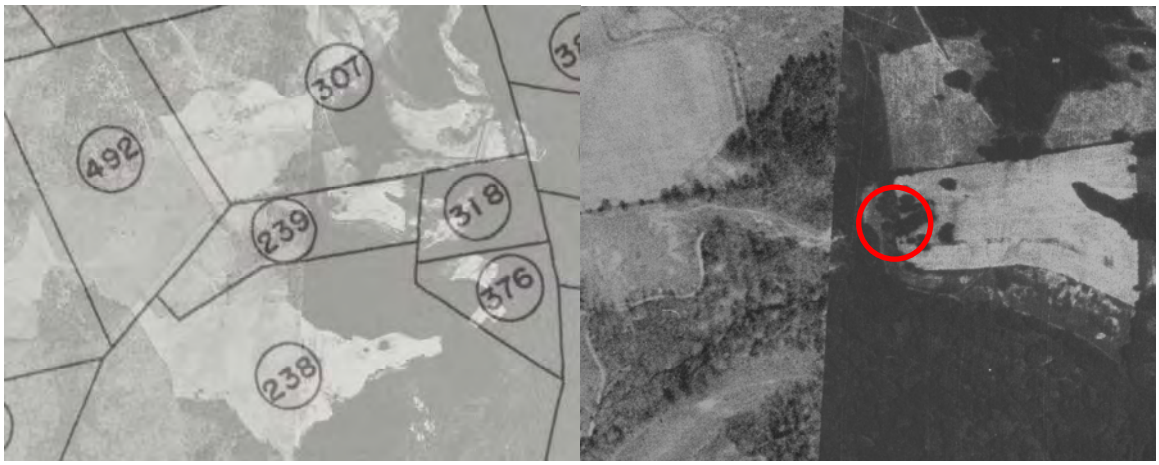
On January 6, 1904, Bettie B. Travis and her husband, F. M. Travis conveyed 20.2 acres to Alex and Richard Dobbins (CC DB 71: 2), the same property as modern-day Tract 239. In the 1900 census, Richard Dobbins was listed as a 15-year old, single, black male who was living with his mother, a washer woman, his three younger sisters and brother in a rented house in the Port Royal District of Caroline County. Neither Richard nor his mother could read or write (U. S. Census 1900). At that same time, Richard's older brother, Alex Dobbins, was living in Florence, New Jersey as a boarder along with four other black Caroline County men, all of whom worked as day laborers (U. S. Census 1900). Their purchase together, four years later, of a 20-acre farm in Caroline County can easily be interpreted as an attempt for a better life for the Dobbins family.

In 1905, Alexander Dobbins married Daisy M. Robb in Caroline County (CRHC file #2004-040-091-034). The Dobbins purchase most likely marks the beginning of occupation on the property. It is interesting to note that a number of other parcels in the immediate vicinity were also purchased by African-American families from Bettie and F. M. Travis in the late nineteenth and early twentieth centuries (see Tracts 318 and 376). Together, these families formed a small, rural African-American community.

By 1910, Richard J. Dobbins had married a Caroline County girl named Virginia. That year, they were living with her sister's family in Florence, New Jersey (U. S. Census 1910), but Alex Dobbins remained on the farm on modern-day Tract 239. In 1920, things were much the same. Richard Dobbins and his wife still lived in Florence, New Jersey, with children of their own, and their widowed brother-in-law as part of their household (U. S. Census 1920). Alex Dobbins remained on the farm in Caroline County.

In 1930, Richard Dobbins still lived with his wife and children in Florence, New Jersey, while older brother Alex continued to live on the farm in Caroline (U. S. Census 1930). In 1937, a single structure is visible within modern-day Tract 239, immediately surrounded by large trees with open/cultivated lands to the east. A second section of

cultivated land is visible in the western part of the tract. The remainder of the tract is in forest.



Map 55. Tract 239 (left), and the Dobbins farm in 1937 (right).

In 1940, no structures of any sort are shown on the Caroline County road map in the location of the Dobbins farm. Despite that oversight, the 1940 census recorded Alec [sic] Dobbins as living on his farm off of Highway 617, the location of modern-day Tract 239. Dobbins was noted as a "share farmer," and that he rented his farm. He lived with his two grown sons, both of whom worked at the "cellophane plant" (the Sylvania Plant in Fredericksburg). It was also noted that he lived in the same house as the five years previous (U. S. Census 1940). At some point after the initial purchase of the land jointly with his brother, Richard apparently purchased Alex's half interest in the property to become the full owner.

Richard Dobbins retained ownership of the modern-day Tract 239 and Alex Dobbins maintained it as a farmstead until acquisition in 1941. On May 28, 1941, the United States government acquired the 20.8-acre tract from Richard Dobbins as Tract 239 (CC DB 114:353).

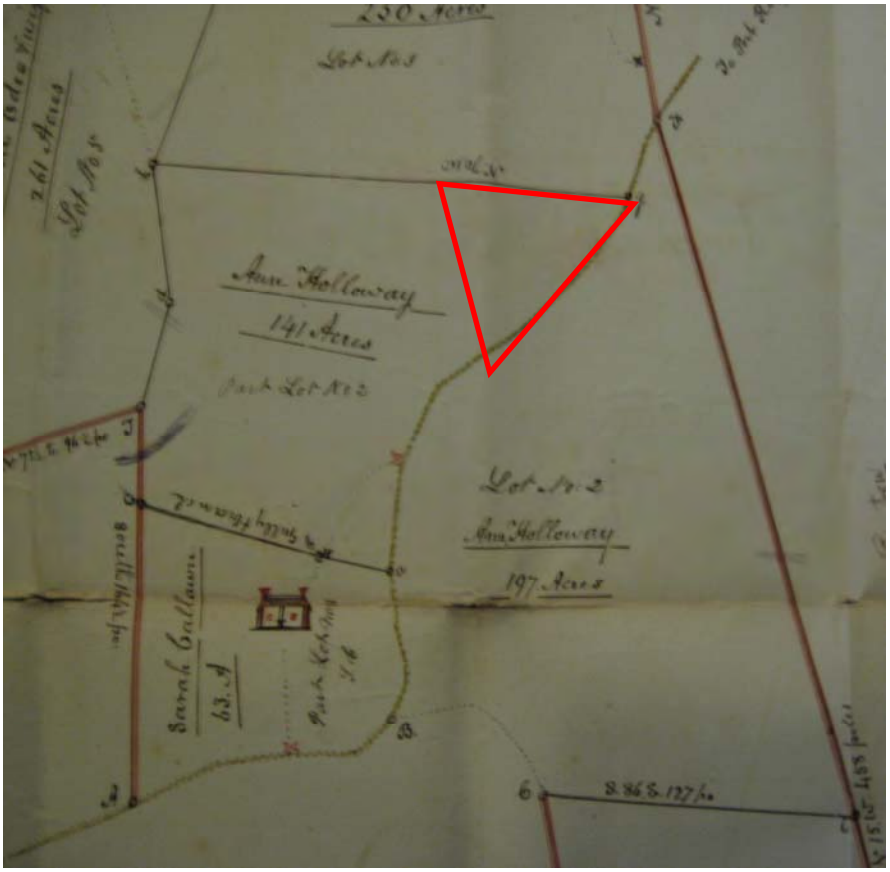
Summary: From *ca*. 1700, modern-day Tract 239 was part of Bloom's Grove Farm, owned by Thomas F. Royston, Sr., who willed it to his son, Thomas Royston, Jr., upon the elder's death in 1815. In 1838, the property on which modern-day Tract 239 is located was sold by Thomas Royston, Jr. to William Callawn, Sr. When Callawn's estate was divided in 1855, portions of the Bloom's Grove Farm plus other properties were distributed to his heirs, including his son-in-law and daughter, Casewell and Lucy Eades. That same year, the Eadeses sold a 158-acre parcel out of their inheritance to John W. S. Callawn, who was resident on the adjacent parcel. J. W. S. Callawn died in 1870. Amongst his heirs was daughter Bettie. By 1904, Bettie owned the 20.8 acres, having most likely inherited it from her father. That year, Bettie Callawn Travis sold the parcel to African-American brothers Alex and Richard Dobbins. Alex stayed on the farm while Richard made his home in New Jersey. Alex Dobbins appears to have been the first occupant on the land. Prior to 1904, there is no documentary or photographic evidence of occupation on Tract 239. Prior to this time, the 20.8 acres was a small, peripheral portion

of much larger land tracts with occupation located elsewhere. After the 1904 purchase, Alex Dobbins occupied and improved the land as a renter from his brother, operating it as a farm. The farmstead observed on the 1937 aerial photograph can be attributed to Alex Dobbins, spanning from 1904-1941.

Tract 252 (Map Sheet 4, Quad D3)

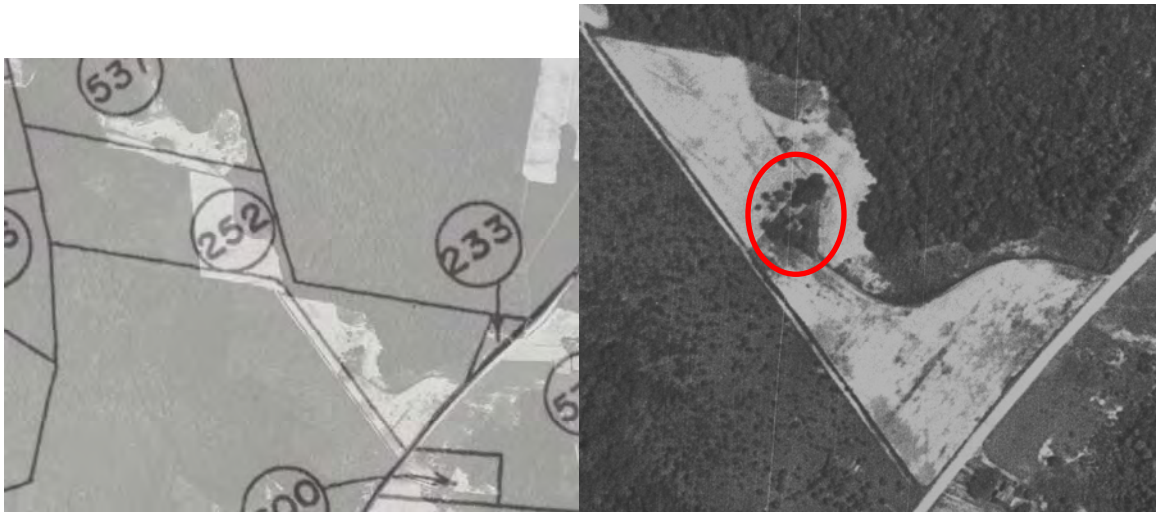
Occupation History: Inspection of the 1937 aerial photo shows occupation in this roughly hourglass-shaped tract in Caroline County. In 1941, the government acquired the property through condemnation in the District Court of the United States for the Eastern District of Virginia, Miscellaneous case No. 1579 (CC DB 116:140), as Tract 252, which encompassed 35.5 acres. Only one occupation was noted within the tract on the aerial photo, within the southeastern portion of the property on State Route 616.

The history of modern-day Tract 252 from *ca*. 1700 until 1887 is identical to Tract 233. At that time, heirs of William Callawn are in possession of much of the land that had once been known as Bloom's Grove, including "Part Lot No. 2" of 141 acres, which had been inherited by Callawn's granddaughter, Ann Holloway. This lot included the occupied portion of modern-day Tract 252. Although various houses existed on Callawn's estate when it was divided, none of them were noted on Ann Holloway's property. Holloway most probably lived elsewhere. The Callawn family retained ownership of portions of the Bloom's Grove Farm property until 1906, when W. N. Collawn and his wife conveyed the occupied portion of modern-day Tract 252 to Henry Holmes and his wife Laura (CC DB 75:489). It is most likely that the occupation visible on the aerial photograph began with this purchase.



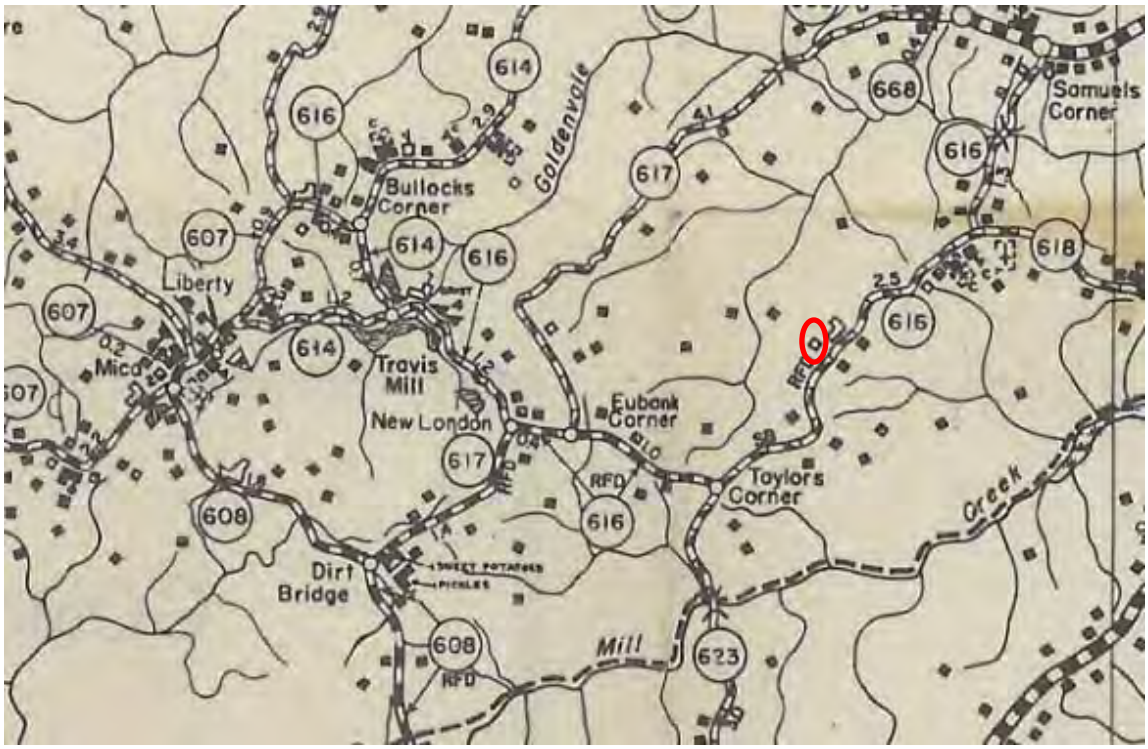
Map 56. Portion of the plat map of the William Callawn Estate, showing Lot No. 2 distributed to Ann Holloway, which includes the location of modern-day Tract 252.

In 1909, Henry Holmes conveyed a portion of modern-day Tract 252 to his wife Laura (CC DB 75:490). Henry and Laura Holmes added to their landholdings on September 19, 1916 with a purchase from Willing Bowie (CC DB 84:161). Together, these three tracts make up modern-day Tract 252. On the 1937 aerial photograph, the farmstead appears to be an active occupation surrounded by agricultural fields, with the westernmost part of the tract in woods.



Map 57. Tract 252 (left), and the Laura Holmes farmstead (right).

Despite the appearance of occupation in 1937, by 1940 when the farm is depicted on the Caroline County road map, it is shown as "not in use," the same as the neighboring property owned by family member Edward Holmes. On October 30, 1941, the United States government acquired the 1.2 acres from Laura Holmes for $360 for the 35.5 acres (CC DB 116:140).



Map 58. Portion of the 1940 road map of Caroline County showing the building on modern-day Tract 252 as "farm unit, not in use."

Summary: From *ca*. 1700, modern-day Tract 252 was part of Bloom's Grove Farm, owned by Thomas F. Royston. In 1838, Thomas Royston, Jr. sold the property on

which modern-day Tract 252 is located, to William Callawn, Sr.. When Callawn's estate was divided in 1855, portions of the Bloom's Grove Farm plus other properties were distributed to his heirs, including his granddaughter Ann E. Holloway. The Callawn family retained ownership of the Bloom's Grove Farm property until 1906, when W. N. Collawn sold a parcel out of it to Henry and Laura Holmes. There is no documentary or photographic evidence of occupation on Tract 252 prior to 1906. Prior to this time, the occupied part of modern-day Tract 252 was a small portion of much larger land tracts with occupation located elsewhere. After the 1906 purchase, it appears that Holmes occupied and improved the land. The farmstead observed on the 1937 aerial photograph can be attributed to Henry and Laura Holmes, spanning from 1906-1941. Despite the existence of an occupied farm on Tract 252 in 1937, the house had been abandoned by 1940, possibly earlier, possibly related to similar activities on the neighboring family farm on Tract 233.

Tract 283 (Map Sheet 4, Quad E2)

Occupation History: Inspection of the 1937 aerial photo shows a farm complex with a with a long entrance lane to a large residence and a number of other outbuildings/barns/structures in this roughly L-shaped tract in Caroline County. In 1941, the government acquired the property for $14,500.00 as Tract 283, which encompassed 328.8 acres. The farmstead structures and surrounding open/cultivated land were all noted along the eastern side of the tract on the aerial photo. The remainder of the tract is in woods.

For the history of modern-day Tract 283 from *ca.* 1700 to 1780, see Tract 323, which shares an identical history in that period.

The chain of title for the land where modern-day Tract 283 is located in the eighteenth century is unclear. There is primary evidence to suggest that the land was part of Thomas Royston's holdings prior to 1780. However, according to secondary sources, from 1780 to 1790 the land was owned by a man known as "Mr. Rowe," who was the original builder of the house on modern-day Tract 283 (Farmer 1936b). Without additional primary data, it is possible that the secondary source mistook Royston for Rowe. Whoever the builder, the house was originally known as Locust Grove and was situated on 500 acres. "The house was situated in a grove of locust trees, all of them averaging sixteen feet in circumference" (Farmer 1936). There is a break in the chain of title between Mr. Rowe in the late eighteenth century and the next known owner, William Callawn.

It is unclear when William Callawn acquired the property where modern-day Tract 283 is located. However, as early as December 1830, William Callawn's son Richard reportedly had, "a west wing…added" (Farmer 1936b) to Locust Grove which suggests that William Callawn already owned the property and that Richard was already in residence.

In September 1855, the location of modern-day Tract 283, plus other property, was included in the estate of William Callawn (Callawn vs. Callawn 1857, CRHC unindexed file of Caroline County Chancery Court Ended Papers). William Callawn died intestate and his estate was divided by the Chancery Court. Callawn's estate contained a total of 1,828 acres in two tracts or parcels, including one of 1,479 acres where modern-day Tract 283 is located. Callawn's estate was distributed among seven heirs (all over the age of 21), including his widow Elizabeth (who received her widow's dower), four of his children, one son-in-law and one granddaughter, who all received equal shares of the property.

Notable among Callawn's heirs was son Richard Callawn. In the distribution of William Callawn's estate (Callawn vs. Callawn 1857), he received Lot No. 3, consisting of 250 acres, which includes the occupied portion of modern-day Tract 283, with a 'Branch of "Golden Vale"' at its northeast corner. Richard Callawn was apparently still living on the property in 1855, in the Locust Grove house drawn on the plat. He also received five slaves from William Callawn's estate distribution (Callawn vs. Callawn 1857). From 1859 to 1867, he is recorded as being on the land (CC LB No. 1:5-6; 2:3, 18, 30, 43).

Map 59. Portion of the William Callawn Estate plat map, showing Lot No. 3 distributed to Richard Callawn, which includes the occupied portion of modern-day Tract 283.

During the Civil War, Richard Callawn still owned Locust Grove, although it is unclear if he was living there or if he was away fighting. Farmer (1936b) recorded,

"During the War Between the States there was an encampment of soldiers a short distance from the house. There were breast works built by them on the hill near the house." The 1864 Gilmer map depicts the house Locust Grove, but it is neither named, nor is there a family name associated with the house, suggesting that it might have been closed up during the hostilities.

Map 60. 1864 Gilmer map showing the location of Locust Grove.

In 1870, the Richard Callawn was recorded in residence at Locust Grove, joined by his widowed sister, Sarah M. Sale of Bloom's Grove, but no other family members (U. S. Census 1870). Richard Callawn died in May 1880 (CRHC file #2004-040-336-004).

Upon Richard Callawn's death in 1880, the Locust Grove house and its lands were purchased by Dr. Robert G. Holloway (Farmer 1936). Richard Callawn had been father-in-law to Dr. Holloway's late sister, Susan Holloway Callawn (Massey 2009). In addition, Dr. Holloway's mother was a Royston, which is indicative of the connectedness of families and lands (Lelia Holloway Lewis 2007). Dr. Robert G. Holloway bought the estate and re-named it Ridgeway, for the ridge line that lead all the way from the house to the main road, present day Route 618 (Farmer 1936). The house was situated near the hamlet of Lent.

"In 1884, the house was remodeled and a new roofing put on by Dr. R. G. Holoway [sic]" (Farmer 1936). After this remodeling event, no further changes were made to Ridgeway. Together with his wife, Lilie Spindle Amiss Holloway, Dr. Holloway lived at Ridgeway with his family, and practiced medicine out of his office on the grounds. Dr. Holloway's granddaughter, Lelia Holloway Lewis (2007) explained, "He was a doctor and had his office in the yard, and then he had his main office in Port Royal, a little town nearby." The Holloways had seven children: J. Minor, Byrd R., William T., Cleveland A., Lelia W., Robert E. and Annie Lou (CC DB 116:407). In 1889, Lewis T. Kidd was made a trustee of the property on behalf of Eliza S. Holloway (aka Lilie Spindle Amiss Holloway) (CC DB 79:144).

Illustration 19. Front elevations of Ridgeway.
(Photos courtesy of Lelia Holloway Lewis and Estelle Holloway Allen)

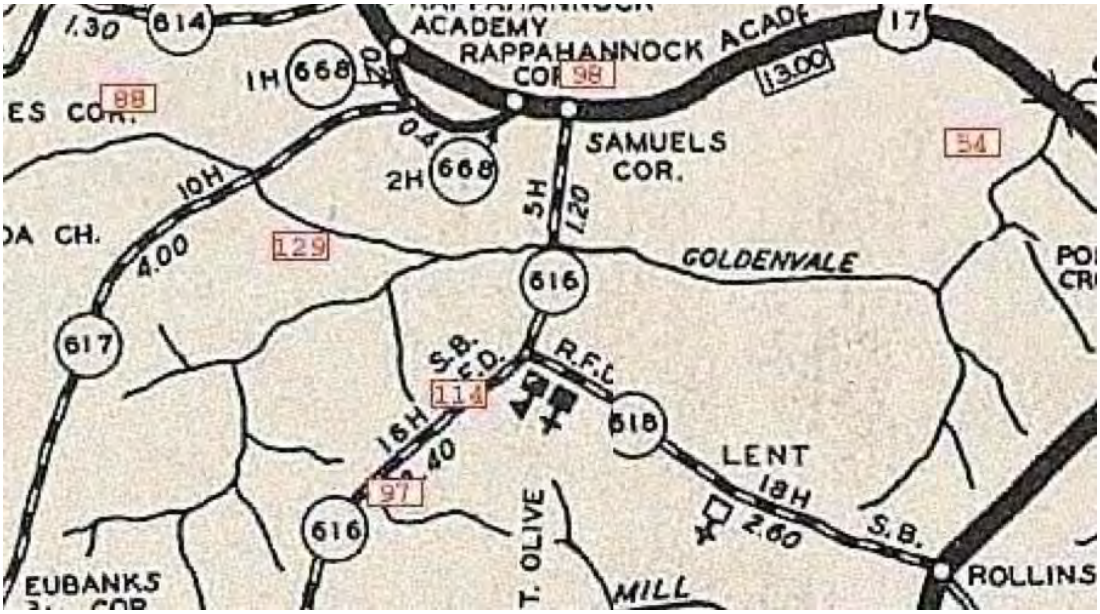
In 1915, Dr. Holloway's son, Byrd Royston Holloway, along with his wife, Marguerite Louise Sewell Holloway, moved to Ridgeway with their family. Informant Lelia Holloway Lewis (2007) recalled, "my father [Byrd Holloway] was an engineer in his early life, and then he was crippled with arthritis. He lived–turned back to the farm. We went back to the farm in 1915. My granddad [Dr. Holloway] was still living then, grandparents were still living at Ridgeway. So we lived there from 1915." When Dr. Holloway died in 1919, his widow and children inherited Ridgeway equally (Farmer 1936b).

Informant Lelia Holloway Lewis remembered, "After Granddad died, of course, his office was vacant, and Mother took Granddad's office and turned it into a summer bedroom, summer cabin, and that was one of our guestrooms, the outside office. She had two beds in there. I remember how she had it fixed up. We had to put guests in there a lot of times. But that was a summer bedroom. Of course, it didn't have any heat in it, so we had it for a summer bedroom. But she had it all fixed up for guests. And lots of reunions people spent the night there. They used that, the little summer cottage. That was still standing, of course, when they took over."

Lilie Spindle Amiss Holloway, widow of Dr. Holloway, continued to live at Ridgeway with her extended family until her death in 1928 (Massey 2009). In 1930, Byrd Holloway's household at Ridgeway included his wife, Louise, three daughters named Lelia, Marguerita and Estelle, three lodgers named Lennart Plunket (age 16), William Lewis (age 14) and Kenneth Crosslin (age 7), and a servant (Frank C. Richardson) (U. S. Census 1930). According to daughter Lelia Holloway Lewis (2007:92), her mother, "took a lot of kids from Catholic Charities, take them through the year." The "lodgers" in the 1930 Census were most likely several children from Catholic Charities.

Also in 1930, Holloway heir, William T., conveyed his interest in the Ridgeway property to his brother Joseph R Holloway, both of whom were brothers of Byrd Royston Holloway (CC DB 101:6). Other Holloway heir, Annie Lou and her husband, died intestate and without issue prior to acquisition. Her interest in the Ridgeway property reverted to the other Holloway heirs (CC DB 101:6).

In 1936, Ridgeway was recorded by Selma Farmer as part of the Works Progress Administration's Historical Inventory Project in Virginia (HIPV) (CRHC file 1999-006-003-188). Farmer's informant was Byrd Holloway, who owned and occupied the house at that time. Farmer's detailed descriptions of the house provide a useful glimpse into Ridgeway. By that time, only three of the locust trees for which the property was known were still present around the house. Also, "There is an oak tree here about 300 years old which is eighteen feet ten inches in circumference," (Farmer 1936).



Map 61. Caroline County 1932-1936 road map indicating the Ridgeway's location at #114 (entrance to driveway), as noted by Selma Farmer.

In describing the layout of the house, Farmer (1936) details:

> There are nine rooms here and an attic which is 44 x 20 and has an eight foot pitch. There are two halls, 6 x 20. There are three rooms in the basement; the cook room, which is 16 ½ x 20, a pantry, 8 x 16 and a storage room, 18 x 20. On the first floor there are three rooms, two of them are 16 ½ x 20, the other is 18 x 20 and they have an eleven foot pitch. On the second floor there are three rooms, also two are 16 x 20, the other 11 x 8 ½. They have a nine foot pitch.

According to informant Lelia Holloway Lewis (2007), a daughter of Byrd Holloway who grew up at Ridgeway, the previous "owner of Ridgeway was a Collawn, and his name was Dick Collawn, and when he [Dr. Robert G. Holloway] moved there, everybody in the neighborhood…told Granddad, the neighbors kidded him, 'Dick Collawn's up in the attic. Now, you always remember that Dick Collawn's always going to be in that attic.' and we kids got to believing it, and we were afraid to go up in that attic, Dick Collawn's ghost was up there. Old Man Dick Collawn he always said, he's going to get you tonight."

In describing one of the notable exterior features of Ridgeway, Farmer (1936b) described, "There [are] hand carved cornices of wood around the eaves of the house," as depicted in the photo below.

Illustration 20. Front elevation of Ridgeway showing carved cornices around the eaves.
(Photo courtesy of Lelia Holloway Lewis and Estelle Holloway Allen)

In describing some of the interior features of Ridgeway, Farmer (1936b) noted, "These [original] floor boards are eight inches wide and one and one-half inches thick." She continued, "There are three mantels, made by hand of yellow pine. They are seven feet six inches wide and five feet eight inches high. They are hand carved and are very pretty. There is a nine inch sunburst design in the centers." These details can be observed in the period photo of Byrd Royston Holloway in his bedroom at Ridgeway.

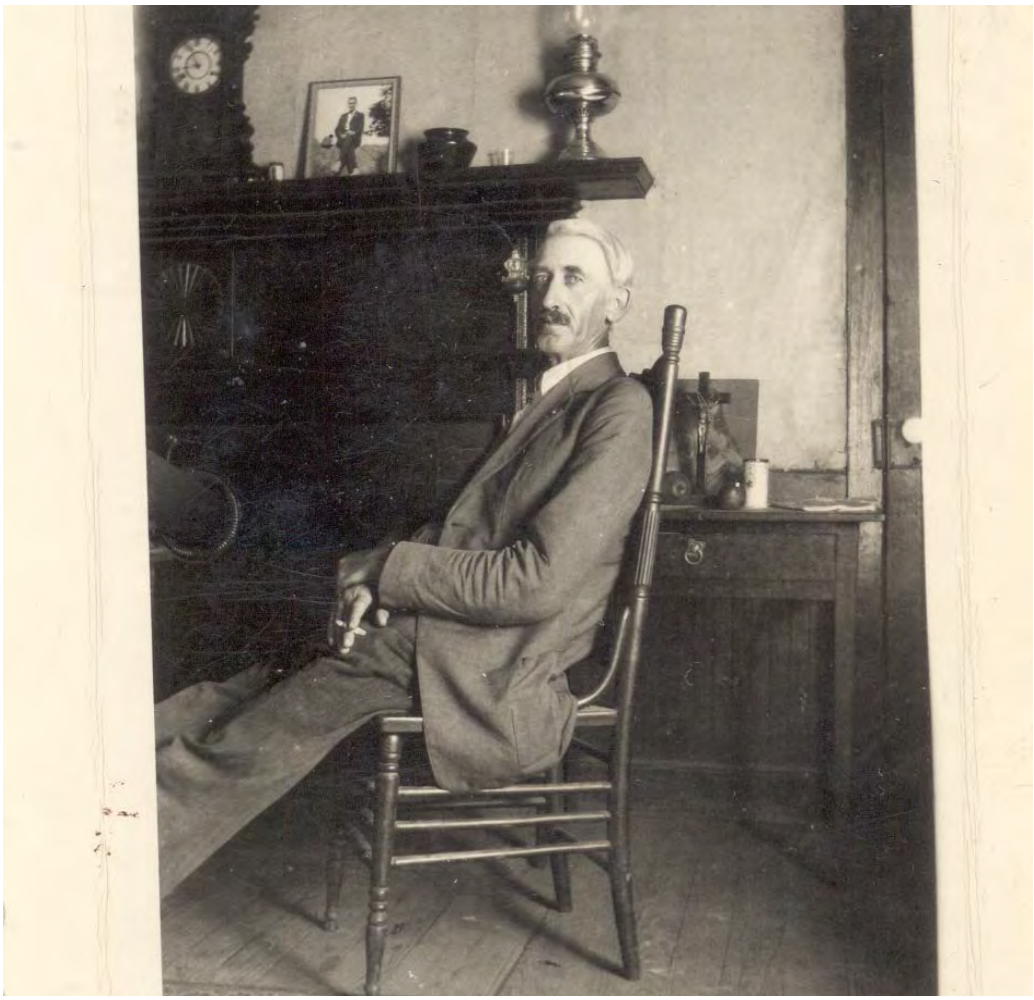


Illustration 21. Byrd Royston Holloway in his bedroom at Ridgeway.
(Photo courtesy of Lelia Holloway Lewis and Estelle Holloway Allen)

Other details about the interior of the house include that, "The walls are papered," as can be seen in the following interior photo of one of the downstairs sitting rooms. Informants Lelia Holloway Lewis and Estelle Holloway Allen (2007) described the details of the room as follows:

> See the stove? And we had an open fireplace, and the stove–it's where the fire-–right in front of the fireplace. And in the other rooms, we had a big, glass-fronted furnace light setting in the fireplace. I remember when we only had the fireplace. And that was a big room. We had two pianos in there, a dining room table, two sofas, and it didn't look crowded it was so big. [There was a] Love seat. My mother had a piano, so did Grandmother. They would play together.

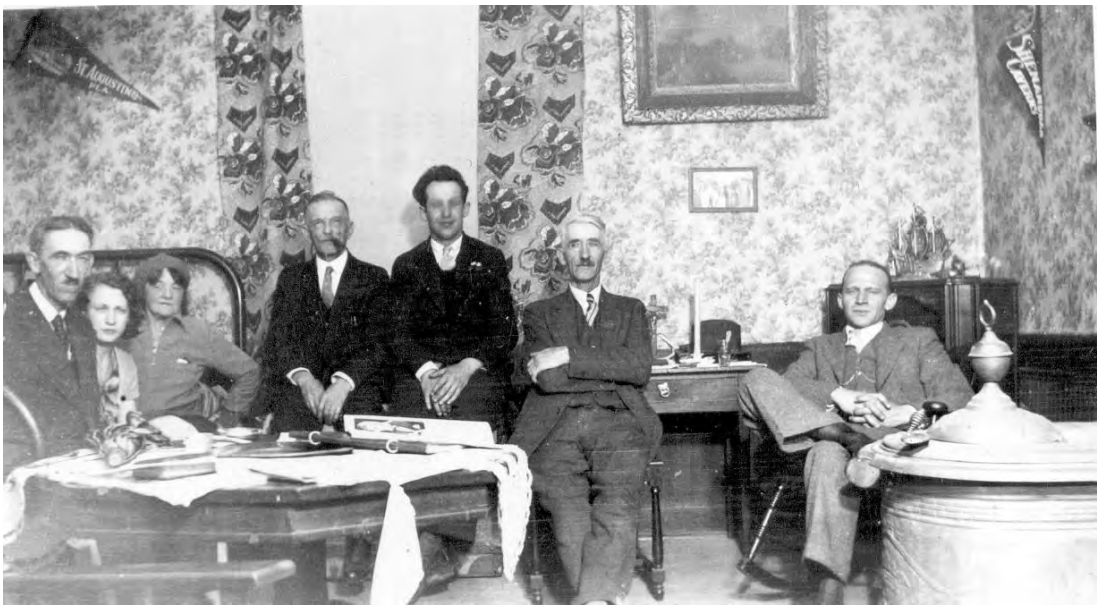


Illustration 22. A gathering at Ridgeway. Left to right: Willie Holloway, Marguerite Holloway, Rosina Holloway, Harry Sewell, neighbor/superintendant of schools Mr. Martz, Byrd Royston Holloway and neighbor from Port Royal, Mr. Debruin.
(Photo courtesy of Lelia Holloway Lewis and Estelle Holloway Allen)

Farmer (1936b) continues her description of the interior details at Ridgeway by noting, "The doors are of a very unusual size. They were made by hand, are of the four panel type and are 7' x 3'4" and are of white pine…There are the common type locks and hinges here." An example of the door and hardware is visible in the photo below of Christmas dinner at Ridgeway. Also visible are the, "nine inch chair rails with two inch crown mould."

Illustration 23. Christmas dinner at Ridgeway.
(Photo courtesy of Lelia Holloway Lewis and Estelle Holloway Allen)

In describing the farmland that lay in front of the Ridgeway house (see photo below), informant Lelia Holloway Lewis (2007) describes, "That's the hillside. That's the barn, one of the barn houses, right there, the barn and the stables. You can see two of them. And that was right at the gate, the big gate that opened down to the–the cows are mostly in their pasture on the other side, but they kept the hillsides all fit, didn't have to mow them. Every spring – every year they had to burn the hillside it would grow so high. It was dangerous if it got away but [they] had a lot of people and water."

Illustration 24. The landscape of Ridgeway: pastures, barn and stable south of house.
(Photo courtesy of Lelia Holloway Lewis and Estelle Holloway Allen)

In addition to these structures, informants (Lewis and Allen 2007) described a number of other buildings on the Ridgeway property, including a tenant house, a summer kitchen, a cook's house, a smokehouse/meathouse, two henhouses, a wash house, a tennis court and two outhouses (one at the stables and one through the garden behind the house).

Reportedly, Ridgeway tenants “Nancy and Freddie Morton, they had five children, three boys, and they all worked the farm” (Lewis 2007).

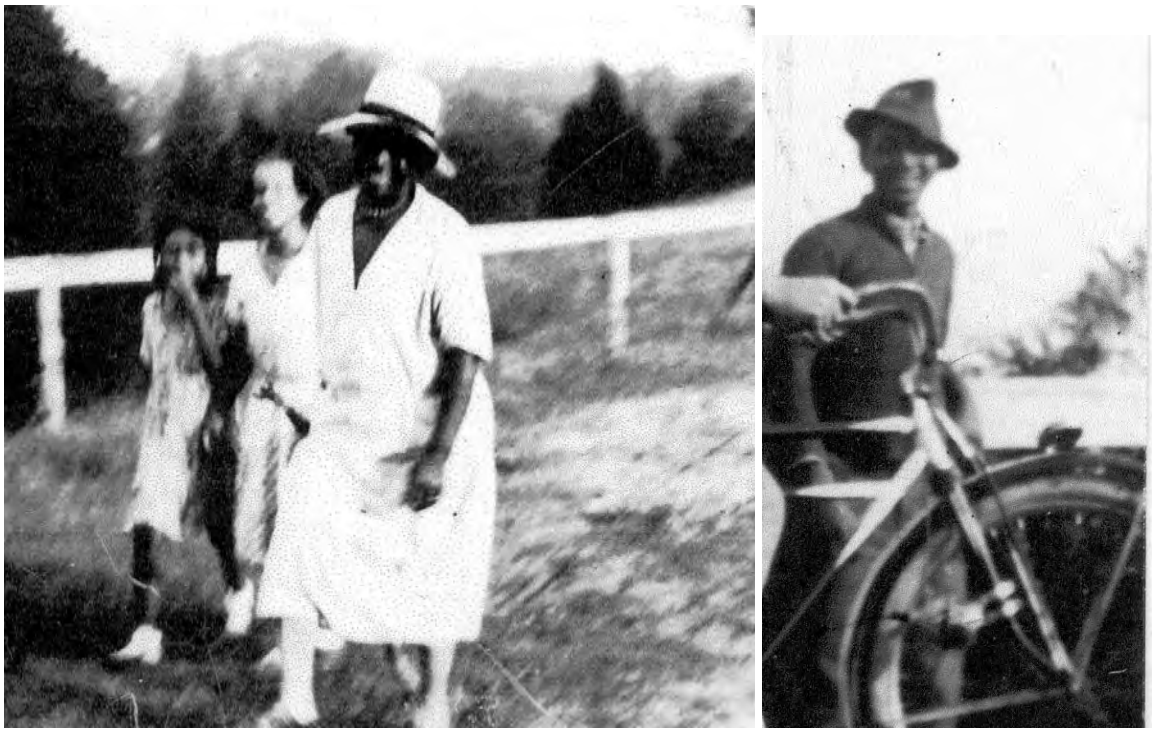
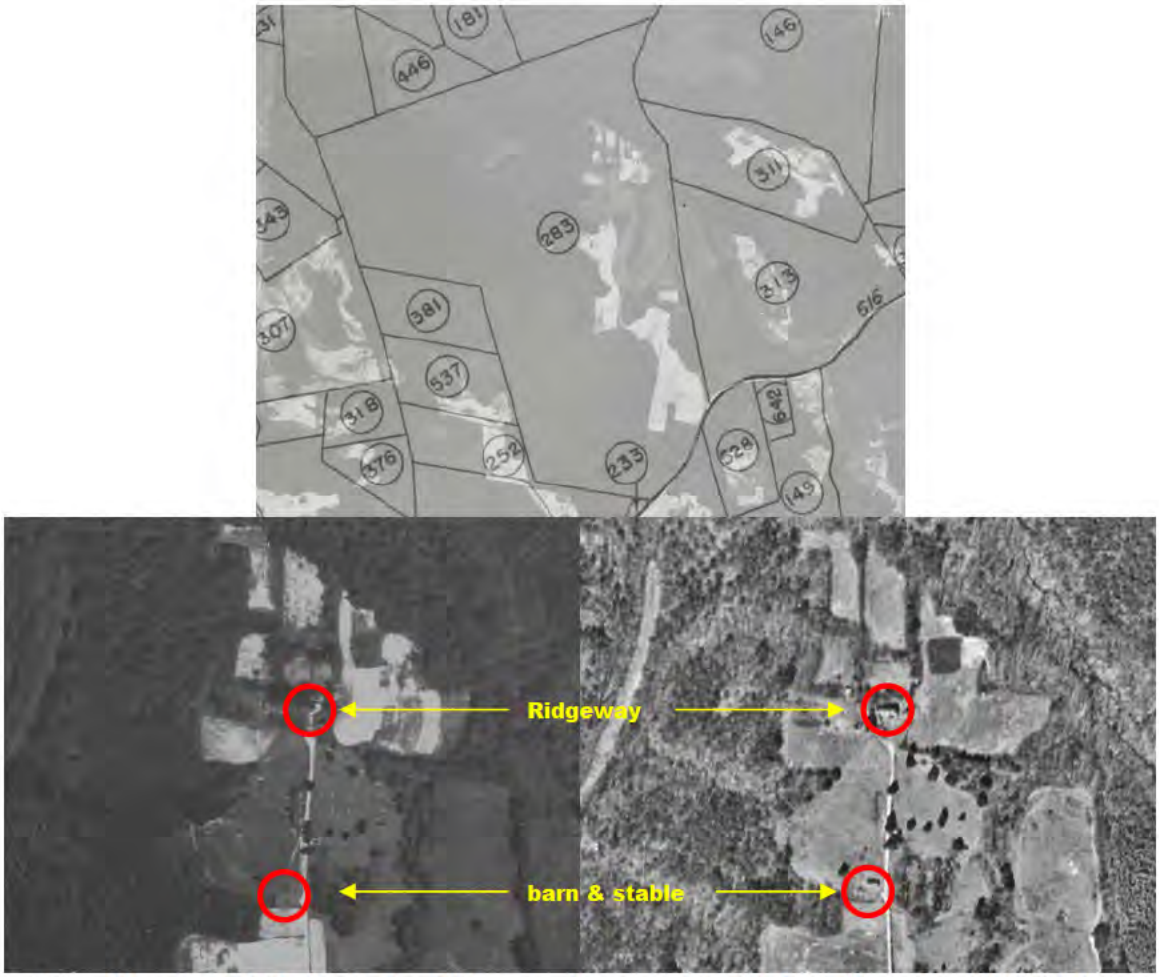


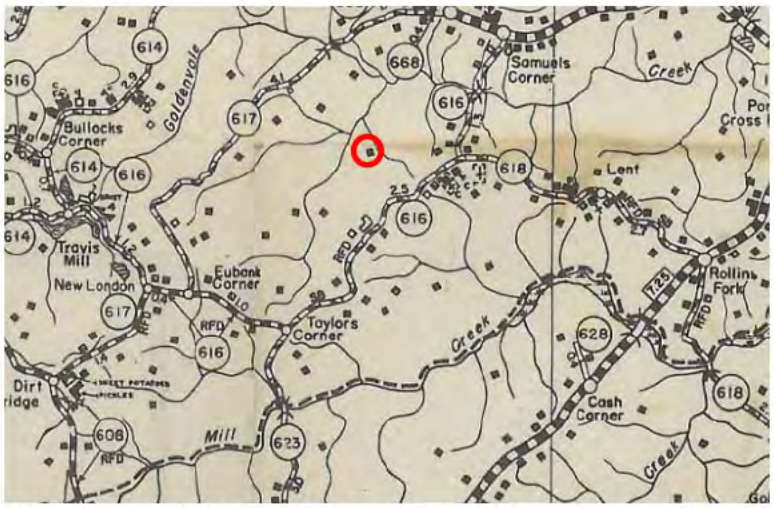
Illustration 25. The Morton family, tenants at Ridgeway. Left: Nancy Morton and her two daughters; Right: Thomas Morton, son of Nancy and Felix Morton.

On the 1937 aerial photographs, the distinctive long driveway down the ridge to the house Ridgeway is visible, as are many of the various cultivated fields. The larger outbuildings, such as the barn and stable, are barely visible. A number of other outbuildings reported on the property by informants are not visible. This lack could arise from lack of photograph resolution, small structure size, or shielding by trees. The farmstead features and layout are more visible on the 1943 aerial photograph.



Map 62a. Tract 283 (top); the Ridgeway farmstead in 1937 (left) and in 1943 (right).

On the 1940 road map of Caroline County, Ridgeway is marked simply as "farm unit, in use." No other indications suggest the size and complexity of the farm, or its long history.



Map 62. Portion of the 1940 road map showing Ridgeway as "farm unit, in use."

Byrd Holloway lived at Ridgeway with his family until acquisition in 1941. When asked how her family felt about acquisition, Lelia Holloway Lewis (2007) remembered, "They were very sad–my dad was so sad that he refused to leave Ridgeway because we were just ready to get the electric, and he had people to work the farm, and everything was settled and, of course, we were all away. So he knew all about it…but he still hated to give up Ridgeway, they hated so bad to have to give up the house. We were the last ones to leave in the whole area, we were the last one. And that's why we had the sentinels around the place…They were stationed there until we left. So I think they moved up here in July of '41."

Illustration 26. MPs stand on guard at Ridgeway after acquisition, June 1941.
(Photo courtesy of Lelia Holloway Lewis and Estelle Holloway Allen)

On December 11, 1941, Elliot Campbell was appointed as a substitute Trustee for Lewis T. Kidd, the original Trustee for Eliza Holloway, both of whom were deceased by 1941 (Caroline County Chancery Order Book 11:205, hereafter cited as CC COB). On December 13, 1941, the United States government acquired the 328.8 acres of the Ridgeway farm for $14,500 as Tract 283 (CC DB 116:407). Excepted from that acreage was a "parcel of land set off as a cemetery" (CC DB 116:408).

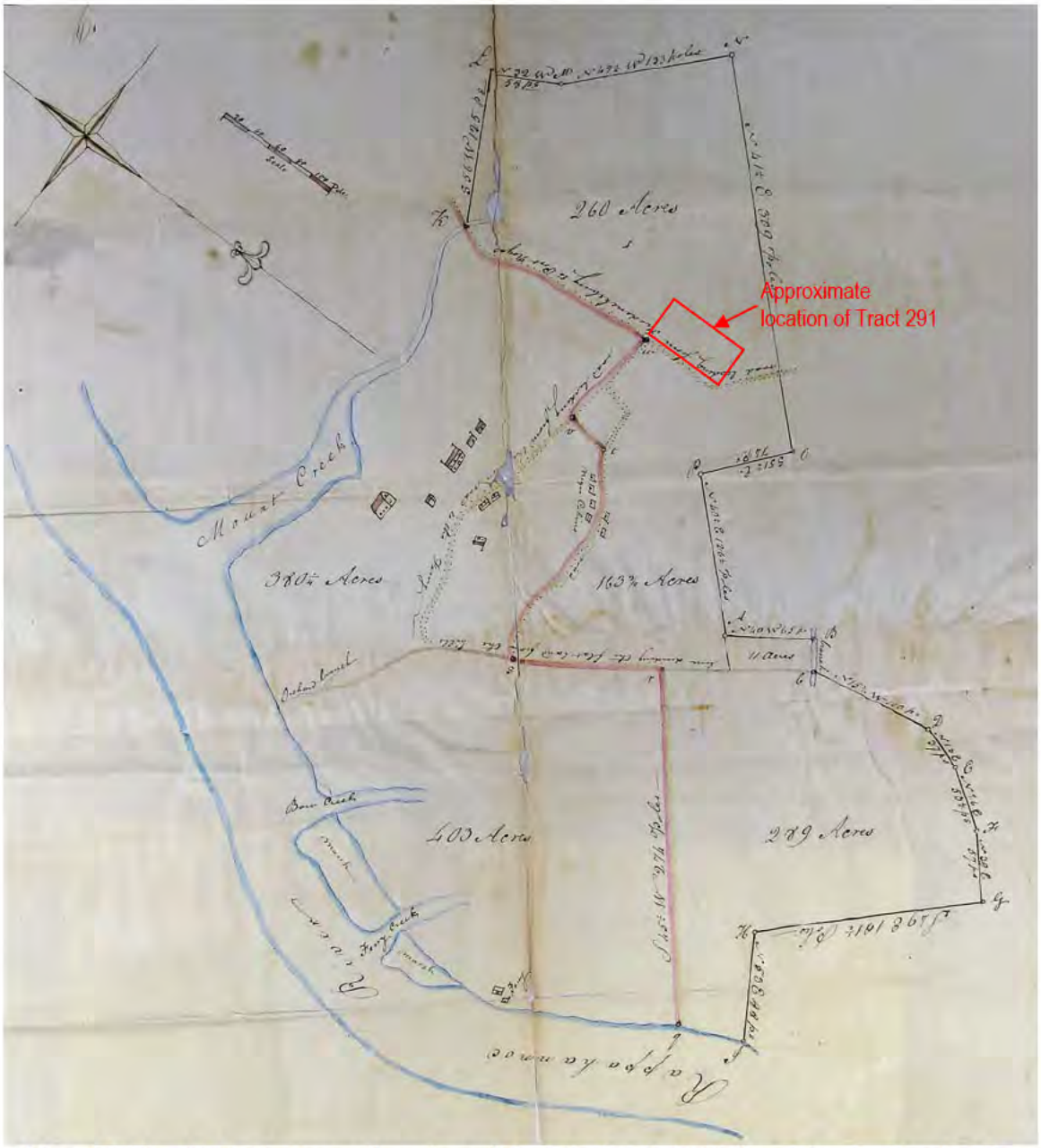
In the aftermath of acquisition and Army training for World War II, the Holloways were able to revisit their old home. "Ridgeway, they just shelled it with–tore it down with shells. And that was a horrible thing. We went back there, we got a pass to go back, and the house was crumbled. And we did go down the basement steps, the concrete steps to the basement to the old kitchen. And the well house was standing, but the house had just been riddled with bullets. Target area, that whole house, made us sick" (Lelia Holloway Lewis 2007).

Summary: From *ca*. 1700 to 1780, primary sources suggest that the property where modern-day Tract 283 is located was owned by Thomas F. Royston, Sr. as part of the Bloom's Grove Farm lands. Then there is a break in the chain of title. In the period 1780-1790, secondary sources state that a "Mr. Rowe" built the house that he called Locust Grove, which is the same house as the occupation on modern-day Tract 283. Again, there is a break in the chain of title. As early as 1830, there is evidence that William Callawn owned Locust Grove and its lands, and they were already occupied by his son, Richard Callawn, who added a west wing to the house. In 1855, Locust Grove and its lands are part of William Callawn's estate. Upon his death, the property was inherited by his son, Richard Callawn. Richard Callawn kept the property and lived in Locust Grove. In 1870, Richard lived there with his widowed sister, Sarah M. Sale. Callawn continued to live at Locust Grove until his death in 1880. At that time, Dr. Robert Green Holloway, who was related to Callawn, purchased Locust Grove and the associated property. He renamed it Ridgeway, and moved there with his family. They lived there, and Dr. Holloway kept a doctor's office there as well. In 1884, Dr. Holloway did some remodeling to the house and replaced the roof. Those were the only changes made to the house until acquisition. In 1915, one of Dr. Holloway's sons, Byrd Royston, returned to Ridgeway with his own family to live. In 1936, Ridgeway was recorded as part of a WPA project, which provided a lot of detail about the house. Byrd Royston Holloway lived in the house with his family until acquisition. In addition, two of his daughters were oral history informants. They grew up at Ridgeway and provided a unique depth of detail and photographs of many aspects of the Ridgeway farm. At acquisition, Byrd Royston Holloway did not want to leave, and his family was the last to leave the area, which resulted in the Army posting M.P.s to guard the property. On December 13, 1941, the United States government acquired the 328.8 acres of the Ridgeway farm for $14,500 as Tract 283. Years later, the Holloways were able to return to Ridgeway, but they found that it was a bullet-ridden shell of a house, having been used for target practice by the Army.

Tract 291 (Map Sheet 2, Quad K8)

Occupation History: Inspection of the 1937 aerial photo shows occupation in two parts of this tract in Caroline County. In 1941, when the government acquired the property, occupations were situated within the northern and eastern portions of Tract 291, which encompassed 14 acres. One larger farm complex was noted at the north end of the tract and a smaller occupation the eastern side of the tract on the aerial photo.

The history of occupation of modern-day Tract 291 is linked to the history of the family who was in occupation at acquisition. Their story on the land is told as much through marriages, census records and inheritance as it is through deeds. From *ca*. 1800 to the 1880s, the history of the land where modern-day Tract 291 is located is identical to Tract 1.



Map 63. The 1832 plat map of portion of the Charles C. Taliaferro Estate, showing the 260 acre tract along with other lands allotted to Theodore Garnett, which includes the location of modern-day Tract 291 (Garnett vs. Taliaferro 1839).

The first event of note in the history of modern-day Tract 291 is the 1887 marriage of George Lomax, son of Jerry and Eva Lomax, and Sally Baylor, daughter of Delia Baylor, both noted as "colored" families (CRHC file # 2004-040073061). Four years prior to that marriage, George and Sally Lomax had a daughter, Mary Jane Lomax. Two years after their marriage, they also had a son, Jerry Lomax (U. S. Census 1900). Little is known about George Lomax or his marriage to Sally other than the evidence suggests that he initially acquired and occupied the land of modern-day Tract 291 some time in the late 1880s/early 1890s having purchased it from the Gouldin family out of the

Linden estate (see Tract 1). Prior to that time, modern-day Tract 291 was part of the larger Linden estate and was not occupied.

By 1894, George Lomax had apparently died, and Sally Baylor Lomax got remarried to Dick Christian (U. S. Census 1900). In 1900, the Christian family was enumerated in the census, in occupation and farming modern-day Tract 291, the land brought into the family by Sally Baylor Lomax, as George Lomax's widow. The family consisted of head of household, Dick Christian (65), his wife Sally (38), stepchildren Mary J. Lomax (16) and Jerry Lomax (10), along with the couple's own children Albert (5) and Laura (1) Christian (U. S. Census 1900). Dick Christian owned the farm free and clear. Of the Lomax children, Mary was at school, and Jerry was already a farm laborer. Mary was the only member of the family who could read (U. S. Census 1900).

By 1910, Sallie Christian was a widow again, and was now the 50-year-old head of household. All of her children by both marriages still lived at home on modern-day Tract 291. They were: Janie Lomax (24), Jerry Lomax (23), Albert Christian (14) and Laura Christian (12). They were also joined by Sallie's granddaughter, Elizabeth Lomax (5), daughter of Jerry Lomax. Two years later, Mary Jane Lomax married George Nelson Owens, son of Henry and Fannie Owens (CRHC file #2004-040-098-049).

By 1920, the generational occupation of modern-day Tract 291 had advanced with Mary Jane Lomax Owens settling with her own family on the land that had once been her father's. That year, George Owens (46) was the head of household, along with his wife, Jane (35) and their two daughters, Elizabeth (13) and Clara B. (10) (U. S. Census 1920). In 1922, the oldest Owens daughter, Mary Elizabeth, married Henry Green, son of Frances and Lewis Green, and left home (CRHC file #2004-040-108-047). On December 18, 1928, what was originally the Lomax family farm was conveyed to Mary Jane Owen, which was the same as modern-day Tract 291 (CC DB 98:513).

In 1930, George Owens (51), was still head of household and lived on modern-day Tract 291 along with his wife, Mary J. (46). Their two daughters had left home, but their son, Aubra (13) lived with them (U. S. Census 1930). By 1935, however, the Owens family had moved off modern-day Tract 291, on to land they owned nearby on Route 615, which was still within the same community, but outside the Fort A. P. Hill boundary (U. S. Census 1940). In 1937, the Owens farm was captured on an aerial photo. Examination of the image indicates two occupations on what was modern-day Tract 291. The larger farm complex was situated in the northernmost portion of the tract, and presumably represented the former household of George and Mary Jane Owens. The secondary occupation was significantly smaller, and situated along the eastern side of the tract. The small amount of cultivated land within the tract with two occupations suggests that farming was undertaken for household consumption only. The identity of the occupants in the households is unknown, but they could have been occupied by family members, such as the adult children of the Owens.

Map 64. Tract 291 (left) and the Owens farm plus a secondary household (right) in 1937.

By 1940, things had changed even more on modern-day Tract 291. Although Mary Jane Owens retained ownership of the land, the family no longer appeared to live there at all. On the 1940 Caroline County Road map, both of the houses that were situated on modern-day Tract 291 were noted as "farm units, not in use," next door to Mt. Dew School and Mt. Dew Church (see Tract 1428). Apparently both dwellings had been abandoned. Additionally, on the 1940 census enumerated George (55) and Mary J. (55) Owens as the sole residents of their household, situated on Route 615. It was land they owned and had lived in for the past five years, worth $200, but it was not a farm. Although they did not live on a farm, George was employed by C. S. Hooper in Howeson, Virginia, as a farm hand (U. S. Census 1940, United States 1942b).

Map 65. Caroline County road map showing the two former Owens households both indicated as "farm unit, not in use," 1940.

On September 20, 1941, Mary Jane Owens and her husband, George N. Owens (also known as Ownes) conveyed their 14-acre tract to the United States government for $600 (CC DB 115:338). At that time, they were not living on modern-day Tract 291, but were still residents of Moss Neck, which was in the same neighborhood, but outside the FAPH boundary.

Summary: From *ca.* 1800 until the *ca.* 1880s, the history of modern-day Tract 291 is the same as Tract 1. During that period of time, modern-day Tract 291 was part of the larger Linden estate and was not occupied. In the 1880s, George Lomax fathered two children with Sally Baylor, notably daughter Mary Jane Lomax. The couple was married in 1887, and George apparently acquired modern-day Tract 291 in this period from the Gouldin family. George Lomax established the first occupation on Tract 291. George had apparently died by 1894 when Sally married Dick Christian, who had died himself by 1910. Sally stayed on the farm with her four children by the two marriages. In 1912, Mary Jane Lomax married George Nelson Owens and they took over the farm on modern-day Tract 291, where they raised two daughters, a son and a granddaughter until 1935. At some point prior to that, a secondary household was established on Tract 291, possibly for a family member. By 1935, George and Mary Jane Owens had moved off FAPH lands, but modern-day Tract 291 remained occupied, possibly by family members. However, by 1940, the two households had been abandoned. In 1941 when modern-day Tract 291 was acquired, it was still owned by Mary Jane Owens, who had inherited it from her family, but she lived elsewhere and the property was unoccupied.

Tract 318 (Map Sheet 4, Quad D2)

Occupation History: Inspection of the 1937 aerial photo shows a single structure in this rectangular tract in Caroline County. In 1941, the government acquired the property for $100.00 as Tract 318, which encompassed 14.5 acres. Only one structure was noted within the tract on the aerial photo, in the southwestern corner of the tract surrounded by open/cultivated land.

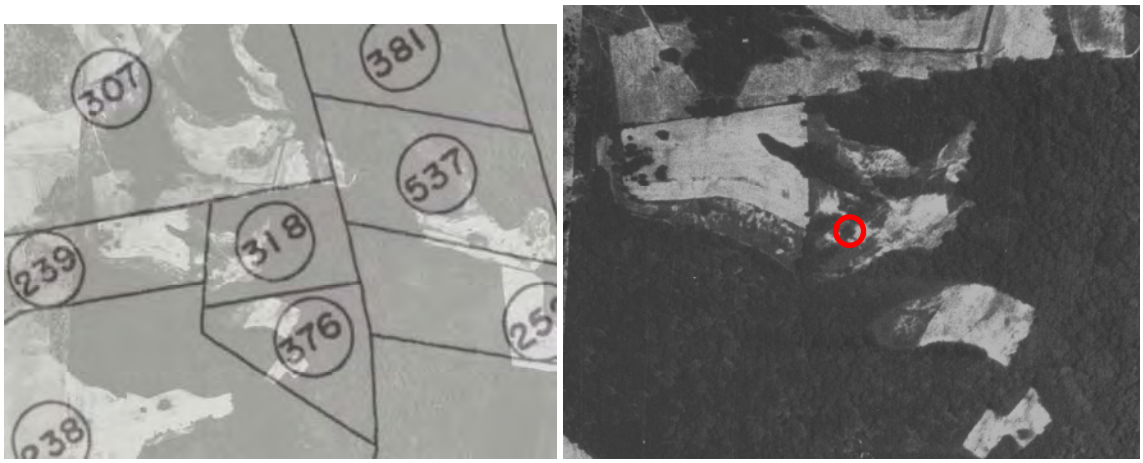
For the history of modern-day Tract 318 from *ca.* 1700 to 1903, see Tract 233, which shares an identical history in that period.

By 1903, Bettie B. Callawn Travis owned modern-day Tract 318 and adjoining lands, having presumably inherited it from her father. Bettie B. and F. M. Travis lived on the lands associated with Travis Lake to the north (see Tract 110), and there is no indication that they were in occupation on modern-day Tract 318.

On August 10, 1903, Bettie B. and F. M. Travis conveyed 14.5 acres to Harry Coleman (CC DB 70:396), the same property as modern-day Tract 318. The previous year, Coleman married Nancy Turner, and their marriage license noted them as “colored” (CRHC file #2004-040-088-030). Coleman’s purchase most likely marks the beginning of occupation on the property. It is interesting to note that in 1911, Nancy Coleman bought the adjacent parcel of 13.7 acres, also from Bettie and F. M. Travis (see Tract 376). As a couple, the Colemans owned a collective 28.2 acres in two adjacent parcels, and perhaps operated them together as a single farm.

In 1937, a single small structure is visible within modern-day Tract 318, surrounded by what appear to be roughly cultivated lands. The remainder of the tract is in forest. In 1940, the Caroline County road map only shows a single “farm unit, in use” in the vicinity of Tract 318 and Tract 376, owned by the Colemans. Again, it is possible that

they began their occupation and farming efforts on Tract 318, and then included or even moved on to Tract 376.



Map 66. Tract 318 (left); the Coleman farmstead in 1937 (right).

Harry Coleman retained ownership of modern-day Tract 318 and operated it as a farmstead, possibly in conjunction with his wife's neighboring Tract 376, until acquisition in 1941. On June 18, 1941, the United States government acquired the 14.5-acre tract from Harry Coleman for $100 as Tract 318/Parcel 5 of the Eastern District of Virginia Miscellaneous case No. 1571 (CC DB 115:126).

Summary: From *ca*. 1700, modern-day Tract 318 was part of Bloom's Grove Farm, owned by Thomas F. Royston, Sr., who willed it to his son, Thomas Royston, Jr., upon the elder's death in 1815. In 1838, the property on which modern-day Tract 318 is located was sold by Thomas Royston, Jr. to William Callawn, Sr. When Callawn's estate was divided in 1855, portions of the Bloom's Grove Farm plus other properties were distributed to his heirs, including his son-in-law and daughter, Casewell and Lucy Eades. That same year, the Eadeses sold a 158-acre parcel out of their inheritance to John W. S. Callawn, who was resident on the adjacent parcel. J. W. S. Callawn died in 1870. Amongst his heirs was daughter Bettie. By 1903, Bettie owned the 14.5 acres, having most likely inherited it from her father. That year, Bettie Callawn Travis sold the parcel to Harry Coleman, who appears to have been the first occupant on the land. Prior to 1903, there is no documentary or photographic evidence of occupation on Tract 318. Prior to this time, the 14.5 acres was a small, peripheral portion of much larger land tracts with occupation located elsewhere. After the 1903 purchase, Coleman occupied and improved the land, operating it as a farm. In 1911, Coleman's wife, Nancy, purchased the adjoining land (Tract 376), and the couple possibly operated the two properties together as a single farm. The farmstead observed on the 1937 aerial photograph can be attributed to Harry and Nancy Coleman, spanning from 1903-1941. The low value of the land in 1941 suggests that if the Colemans did operate modern-day Tract 318 and 376 together as a single unit, Tract 318 was less well improved than the adjoining parcel.

Tract 323 (Map Sheet 4, Quad C3)

Occupation History: Inspection of the 1937 aerial photo shows occupation in this widely C-shaped tract in Caroline County. In 1941, the government acquired the property as Tract 323, which encompassed 366.8 acres. Only one occupation was noted within the tract on the aerial photo, within the south-central portion of the property on State Route 616.

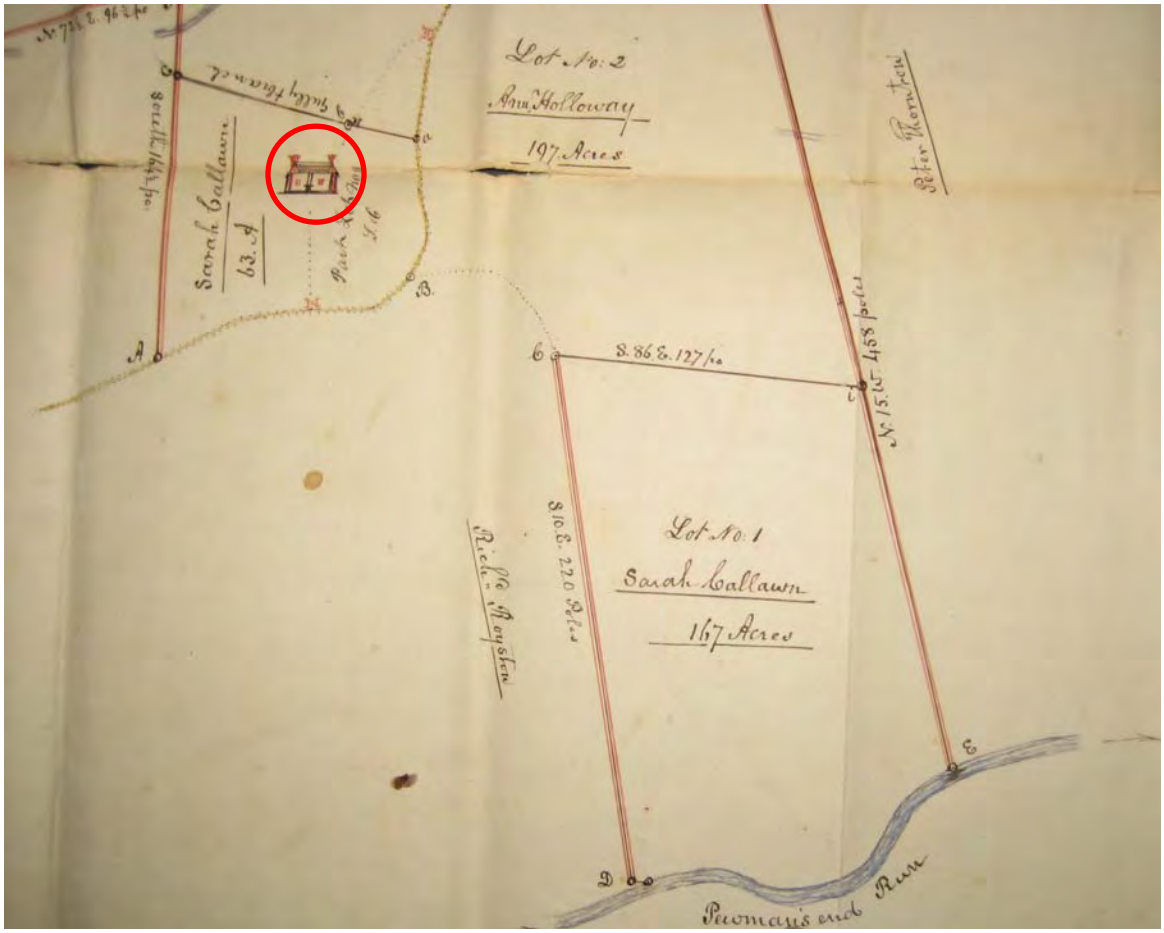
The documentation of occupation on Tract 323 has a bearing on a number of other properties and tracts in its vicinity. The history begins in 1700, with a farm known as "Bloom's Grove." Thomas F. Royston is probably best known as one of the founders of Fredericksburg, who, along with John Buckner, received a royal patent for 2,000 acres of land in 1671, on which the town was later laid out (Embrey 1994:50). Somewhat lesser known was that Royston was actually a resident of Caroline County at a farm called "Bloom's Grove," where he built a house *ca*. 1700 (Central Rappahannock Heritage Center File folder #2007-028-P-003-005, hereafter cited as CRHC). Modern-day Tract 323 contained Royston's house.

All of the deeds required to track the chain of title for Tract 323 were not located. However, it was possible to construct a fairly complete land history using other documents to supplement the deed records. Evidence suggests that Thomas F. Royston, Sr. occupied Bloom's Grove full time as his primary residence. Royston married and had five children, including his namesake, Thomas Royston, Jr., who in turn married Susanah Holloway in 1788. The elder Royston died *ca*. 1815, and passed Bloom's Grove to his son, Thomas, Jr. According to an informant, "From him [Thomas Royston] it [Bloom's Grove] passed into the hands of a family named Collawn [spelled elsewhere as Callawn]" (CRHC #2007-028-P-003-005). As reported, in 1838, Thomas Royston and his wife Susan conveyed 636 acres to William Collawn, Sr. for $3,180.00. The property was described as being situated on "Pumands end run," adjoining lands owned by Collawn, Boulware and Richard Royston. In this transaction, Thomas Royston, Jr. reserved the rights to the "white family burying ground" on the property (CC DB 40:286). This property is Bloom's Grove, and contains the occupied portion of modern-day Tract 323.

In September 1855, a portion of Bloom's Grove farm, including the location of modern-day Tract 323 and the house known as Bloom's Grove, plus other property, was included in the estate of William Callawn (Callawn vs. Callawn 1857, CRHC unindexed file of Caroline County Chancery Court Ended Papers). William Callawn died intestate and his estate was divided by the Chancery Court. Callawn's estate contained a total of 1,828 acres in two tracts or parcels, including one of 1,479 acres that included modern-day Tract 323. Callawn's estate was distributed among seven heirs (all over the age of 21), including his widow Elizabeth (who received her widow's dower), four of his children, one son-in-law and one granddaughter, who all received equal shares of the property.

Notable among Callawn's heirs was Sarah Callawn. In the distribution of William Callawn's estate (Callawn vs. Callawn 1857), she received Part Lot No. 1, consisting of

63 acres and noted as containing "Miss Sarah Callawn's House," which is the same as the occupied portion of modern-day Tract 323. In addition, Sarah Callawn received Lot No. 1, 167 acres fronting on "Pewman's End Run." Sarah Callawn was apparently already living at Bloom's Grove in 1855. She also received four slaves from William Callawn's estate distribution (Callawn vs. Callawn 1857). From 1859 to 1861, she is recorded as being on the land (Caroline County Land Book No. 1:6; 2:5 [hereafter cited as CC LB]).



Map 67. Portion of the plat map of the William Callawn Estate, showing lands distributed to Sarah Callawn, including Part Lot No. 1, which includes the location of modern-day Tract 323 and Bloom's Grove (circled).

In 1860, Sarah M. Callawn married Moore F. Sale (CRHC file 2004-040-046-047). Subsequent to her marriage, Sarah M. Sale continued to be listed as on the land at Bloom's Grove (CRHC file 2004-040-017-018). According to one source, "During the War Between the States the silver here was hidden in the house an[d] was plastered over so that it would not be found by the soldiers who were looking for it. This house was at one time used for a Court House and there were many trials held here" (Farmer 1937a:2). Moore F. Sale died in 1864 (CRHC file #2004-040-320-065), most likely a causality of the Civil War.

On the 1864 Gilmer map, Bloom's Grove is noted along with the name "Collins." Considering that many other family names on this map were misspelled or spelled phonetically, it is possible that the unusual name Callawn was mistaken for Collins. It is also possible that with the death of Moore F. Sale, the house was occupied by tenants while Sarah Sale lived elsewhere.

Map 68. 1864 Gilmer map showing the location of Bloom's Grove.

In 1870, Sarah Sale was living in the household of her brother, Richard Callawn (U. S. Census 1870). By 1876, Sarah M. (Callawn) Sale had died (CRHC file 2004-040-332-020), after which the ownership of both Bloom's Grove and modern-day Tract 323 stayed in the Callawn family. Sarah M. Sale died intestate and the Commissioner of the Chancery Court settled the estate in the favor of William N. Collawn, who received 163 acres "on the north side of the main county road leading from New London to Port Royal" (CC DB 60:48), which included Bloom's Grove and encompassed modern-day Tract 323.

On September 15, 1881, W. N. Collawn and his wife, Virginia E., had possession of the house at Bloom's Grove and some of the associated farmland, which was equivalent to the occupied portion of modern-day Tract 323 (CC DB 60:48), and they lived there. W. N. Collawn retained ownership of the property until his death on May 10, 1926, when it was inherited by his wife, Virginia Ellen (CC WB 39:37). Upon Virginia Ellen Collawn's death, Maud Estelle Collawn Harris inherited Bloom's Grove and she continued to live there as her primary residence.

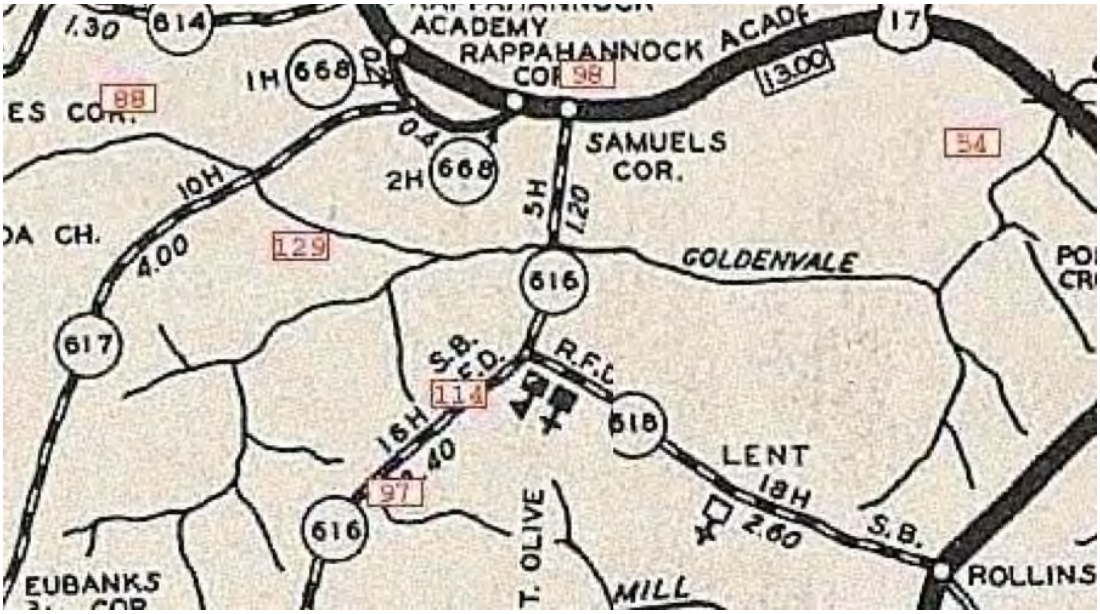
On the 1937 aerial photographs, the Bloom's Grove farmstead is visible in the south central portion of the property, with the surrounding area in cultivation, and a bulk

of the remaining portion of the property is in woods. No other structures are visible. It is interesting to note that Bloom's Grove has the same layout in 1937 that it had in 1855.

Map 69. Tract 323 (left), and Bloom's Grove, the Harris home in 1937 (right).

Also in 1937, Selma Farmer of Port Royal recorded Bloom's Grove as part of the Works Progress Administration's Historical Inventory Project in Virginia (HIPV) (CRHC file 2007-028-P-003-005). Farmer provided a detailed architectural description:

> This house is of the one and one-half story construction. All the timbers used in it were hewn by hand. The nails were made in Blacksmith shops. This is a frame building but the original weather boarding has been taken off and new pine weatherboarding put on.
>
> The house has a gabled roof covered with cypress pine shingles. There are twenty-three windows in the house. They are of the six pane sash type and the panes are 8 x 10. Originally there were shutters on the windows but the last of these were taken off in 1936.
>
> This house faces south and there are three dormer windows on the south side of it. There are three one-story porches here; one on the south side, one on the north side and one on the west. The largest one is on the south side and is 10 x 14.
>
> There are ten rooms in the house. The ceiling height is nine feet. The stairway here is of the enclosed type. The doors are of the six panel, double-cross type, and are made of pine. There are approximately twenty-five doors in this house.
>
> All of the walls here have been plastered and several of them papered. This house has not been remodeled but several rooms have been added to the north side of it.



Map 70. Caroline County 1932-1936 road map indicating the location of Bloom's Grove at #97, as noted by Selma Farmer.

In addition to the description and information about ownership from informant/owner Mrs. Maude Harris of Whites, Farmer took a photograph of Bloom's Grove, which corresponds well with the aerial photograph taken in the same year, but in a different season. It is also consistent with the illustration of the house on the 1855 map.

Illustration 27. Caption on back of photo reads, "Blooms Grove, ca. 1700, 2.5 mi from Port Royal, Built by Thomas Royston."

On the 1940 road map, Bloom's Grove is depicted as an active farmstead, situated in its distinctive location north of a curve in Route 616.

Map 71. Portion of the 1940 road map of Caroline County showing Bloom's Grove on modern-day Tract 323 as "farm unit, in use."

Maude Collawn Harris retained Bloom's Grove until acquisition. In 1941, the United States government acquired the 366.8 acres from "Maude E. Harris, widow, also known as Maud Estell Harris, formerly Maude E. Collawn, of Whites, Virginia, being the sole and only heir-at-law of Virginia Ellen Collawn, deceased" for $8,000. The deed also noted that the property contained two cemeteries (CC DB 116:111112), one of which was most likely the Royston's "white family burying ground."

Summary: In *ca*. 1700, Thomas F. Royston, Sr. built the house known as Bloom's Grove Farm on modern-day Tract 323. Upon his death, the property was inherited by his son, Thomas Royston, Jr., who in turn sold 636 acres of it, including the house to William A. Callawn in 1838. When Callawn's estate was divided in 1855, portions of the Bloom's Grove Farm plus other properties were distributed to his heirs, including his daughter Sarah Callawn. In 1860, Sarah M. Callawn married Moore F. Sale. She retained ownership of Bloom's Grove and lived there for most of her life. After Sarah Sale's death, W. N. Collawn and his wife Virginia inherited Bloom's Grove. After their deaths, Bloom's Grove was inherited by Maude Collawn Harris in 1926. In 1937, Bloom's Grove was documented as part of the WPA's HIPV project, when it was described and photographed. Harris lived at Bloom's Grove until acquisition. Documentary and photographic evidence of occupation on modern day Tract 323 indicated continuous occupation in the Bloom's Grove house from *ca.* 1700, first by members of the Royston family until 1838 and then by members of the Callawn family until acquisition by the United States government.

Tract 326 (Map Sheet 2, Quad B10)

Occupation History: Inspection of the 1937 aerial photo shows a structure, Bethesda Baptist Church, in this triangular tract in Caroline County. In 1941, the government acquired the property for $7,150.00 as Tract 326, which encompassed 8.8 acres. Only one structure was noted within the tract on the aerial photo, at the northern point of the property on State Route 614.

The history of Tract 326 is simple and straightforward. Bethesda Baptist Church's origins arise directly from Liberty Baptist Church. In April 1847, the membership of Liberty Baptist Church considered a resolution that stated:

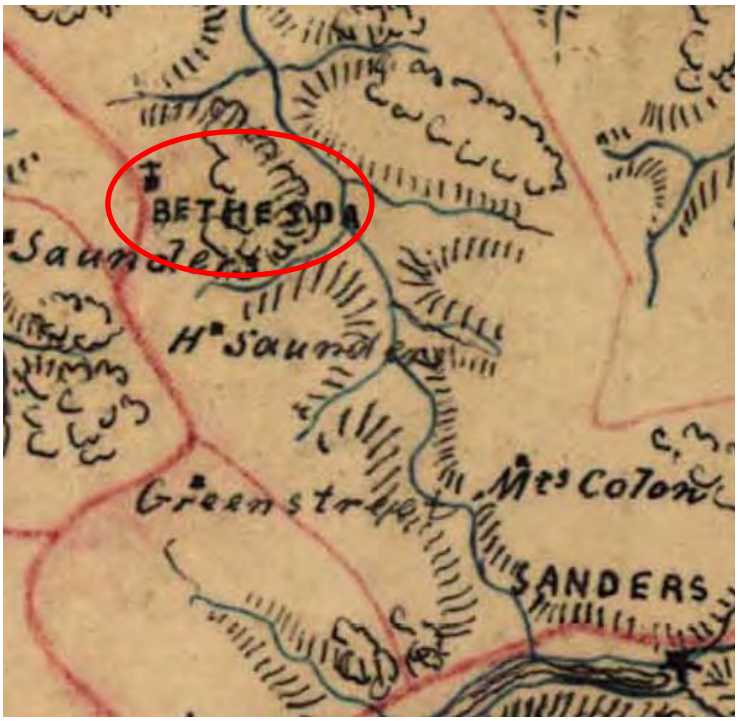
> Whereas we believe intemperance is one of the greatest evils existing, and causes more trouble to the churches of Christ than all others combined, and whereas we believe the making and vending of ardent spirits, for ordinary purposes, to be incompatible to the Christian profession; therefore resolved that any member or members of this church manufacturing or selling the same, shall be subject to be dealt with by the church, and if they persist shall be subject to excommunication (Luck 1941:47).

Liberty declined to adopt the resolution by a narrow margin. Those members of the church who were in favor of the resolution withdrew from Liberty Church to form their own church, Bethesda Baptist.

In December 1847, for the sum of $42.50, 8½ acres of unimproved land was sold by Adison Holloway and his wife Sally to Addison L. Long, William A. Taliaferro, William Collawn and Thomas W. Gouldin "to be used to build Bethesda Baptist Church" (CC DB 46:508). The land was situated on the "main road from Rappahannock Academy to the Liberty Meeting House" (modern day Route 614). This location was three miles northeast of Liberty.

According to its former pastor, Norman Luck (1941:52), "The bricks for the building were made nearby on Addison Holloway's land…The building was a symmetrical and substantial brick edifice. Inside galleries on each side, and above the entrance were supported by neat pillars, and the entire building was neatly finished." The two churches co-existed in harmony, often sharing ministers and church events.

In 1864, Bethesda was depicted on the Gilmer map in its prominent location on the main road between Rappahannock Academy and Liberty Meeting House.



Map 72. 1864 Gilmer map showing Bethesda Church.

Bethesda Baptist Church was an important hub of the surrounding community, and many of the people who lived in the area had memories of activities at Bethesda Church. A few recollections follow:

Virginia Sale Broaddus: "Dad had to go to the barn and feed his cows and milk his cows and feed his team and everything, and that happened early Sunday morning. Then he would be ready to go to church. And Mother had to cook, have food ready for us when we came home. And we went to church every Sunday over at Bethesda. That was about 10 or 11 miles from home" (Morton and Morton 2009:320).

Virginia Wright Durrett: "I remember that one of the churches up near Mica, Bethesda, we used to share a preacher [with Liberty Baptist Church], and he'd preach to us two Sundays and them two Sundays. And so their young people, I remember they came down to share a night meeting with us" (Morton and Morton 2009:310).

Nancy Goulding Young: "Have you heard of Bethesda Baptist Church? Well, my grandparents [Nanny Hall Goulding and Thomas Robley] were really active members in that church" (Morton and Morton 2009:316).

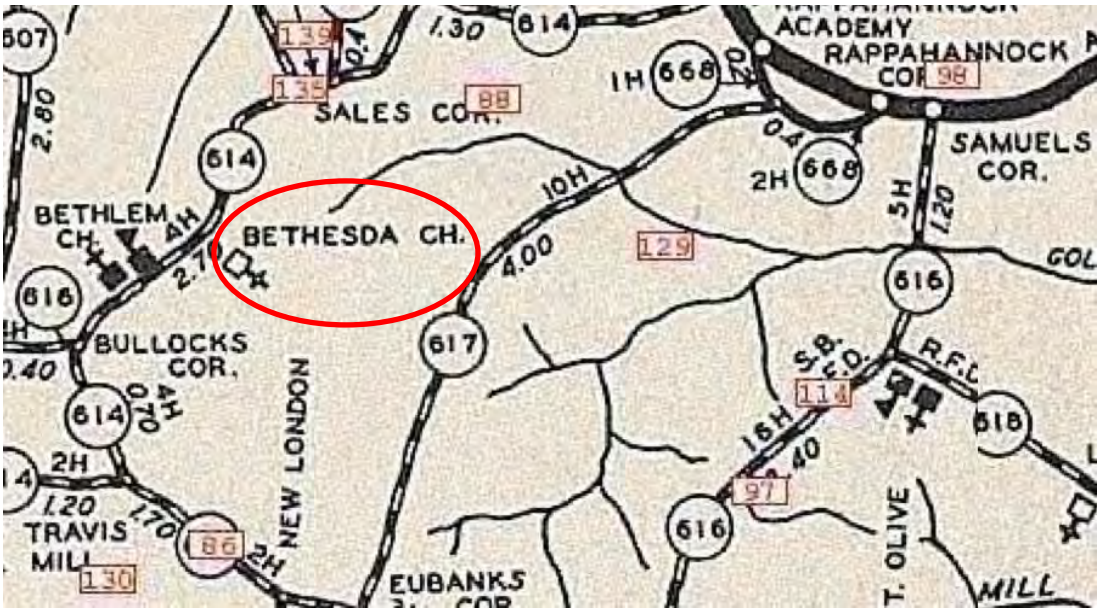
Betty Hicks Enos: My daddy [Wirt Taylor Hicks], he belonged to Bethesda, and that church is on the road going to Mica from Rappahannock Academy, and they tore it down. (Morton and Morton 2009:316).

Wirt Taylor Hicks

Herb Collins: "Well, what happened, he [Reverend Luck] had that [book] published in Fredericksburg, and he had copies of it on the back bench for the last service at Bethesda and Liberty Church, and members of the families took them home with them. (Morton and Morton 2009:314).

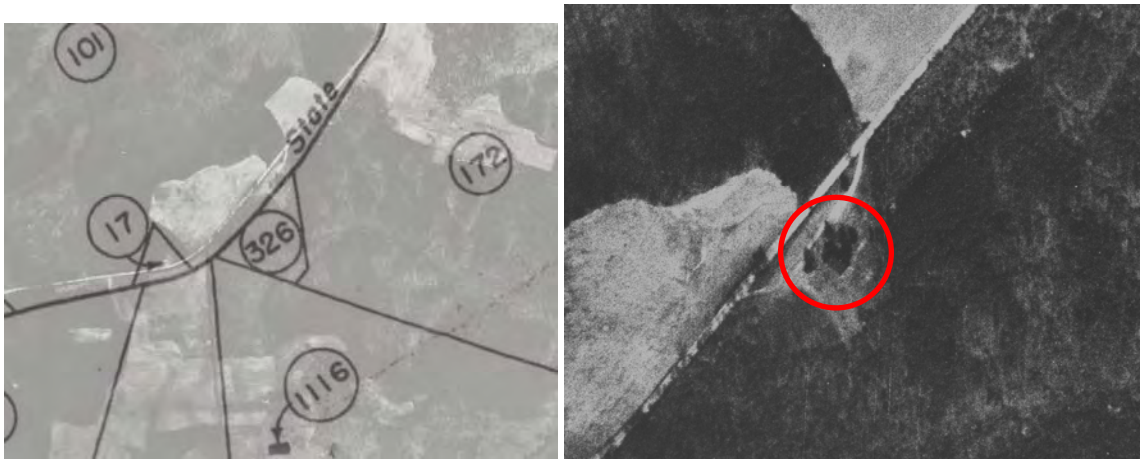
Dr. Robert G. Holloway

Mrs. Lelia Holloway Lewis: "And my granddad [Dr. Robert G. Holloway] was buried at Bethesda, and then he was moved back to Port Royal where the family's burying ground" (Allen and Lewis 2007).



Map 73. Caroline County 1932-1936 road map indicating the location of Bethesda Church, noted as being a white church.

In 1937, Bethesda Baptist Church was visible on the aerial photo as a single structure flanked by two trees, and accessed from the main road.



Map 74. Tract 326 (left), and Bethesda Baptist Church in 1937 (right).

Also in 1937, Selma Farmer inventoried Bethesda Baptist Church as part of the Works Progress Administration's Historical Inventory Project in Virginia (HIPV) (CRHC file 1999-006-003-016). Farmer described the church as an "almost square" structure of one storey with a balcony accessed by "three enclosed winding stairways here that lead to the balcony. One from the front of the building, the other two from the rear." She also noted that the church had two double transom doors on the front, and two doors on the rear of the building. The interior featured plastered walls. Most importantly, Farmer noted, "This is the original building and has not been remodeled."

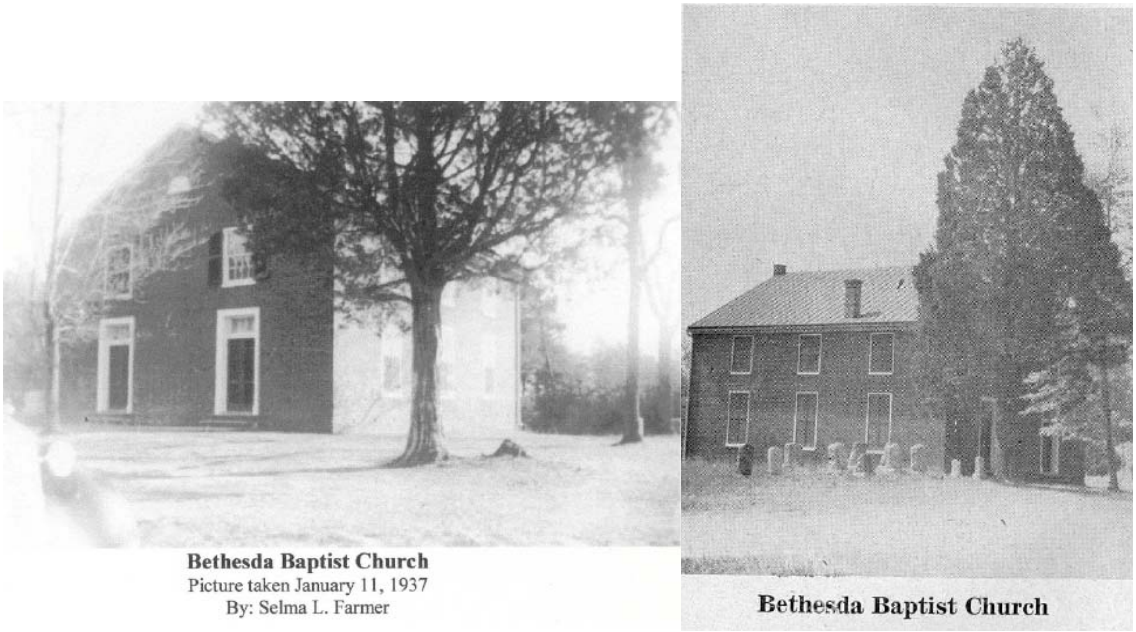
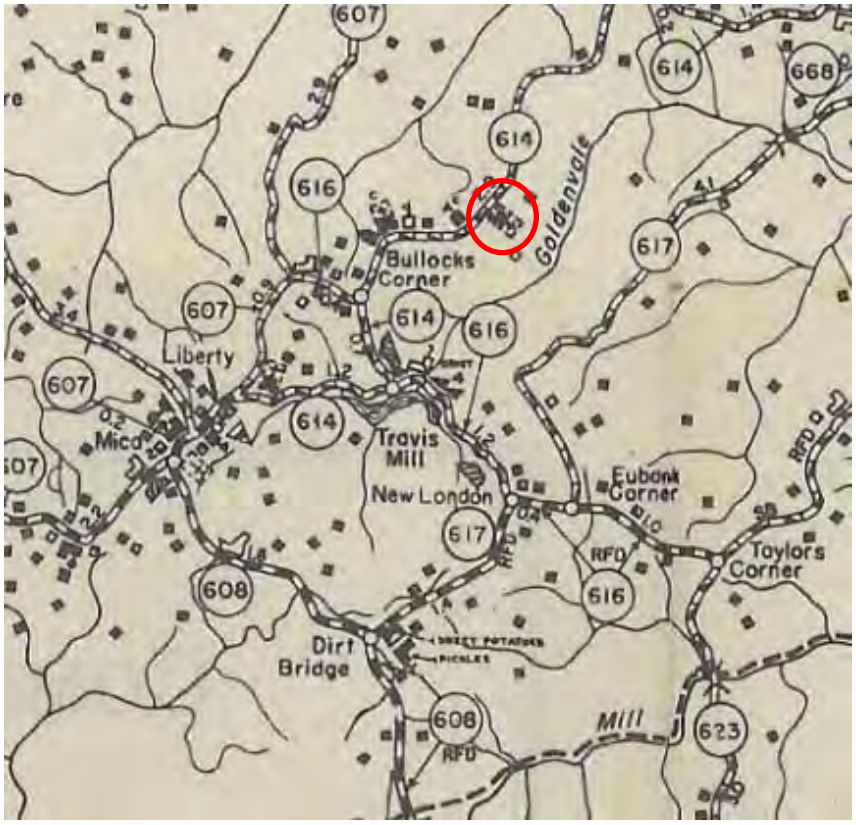


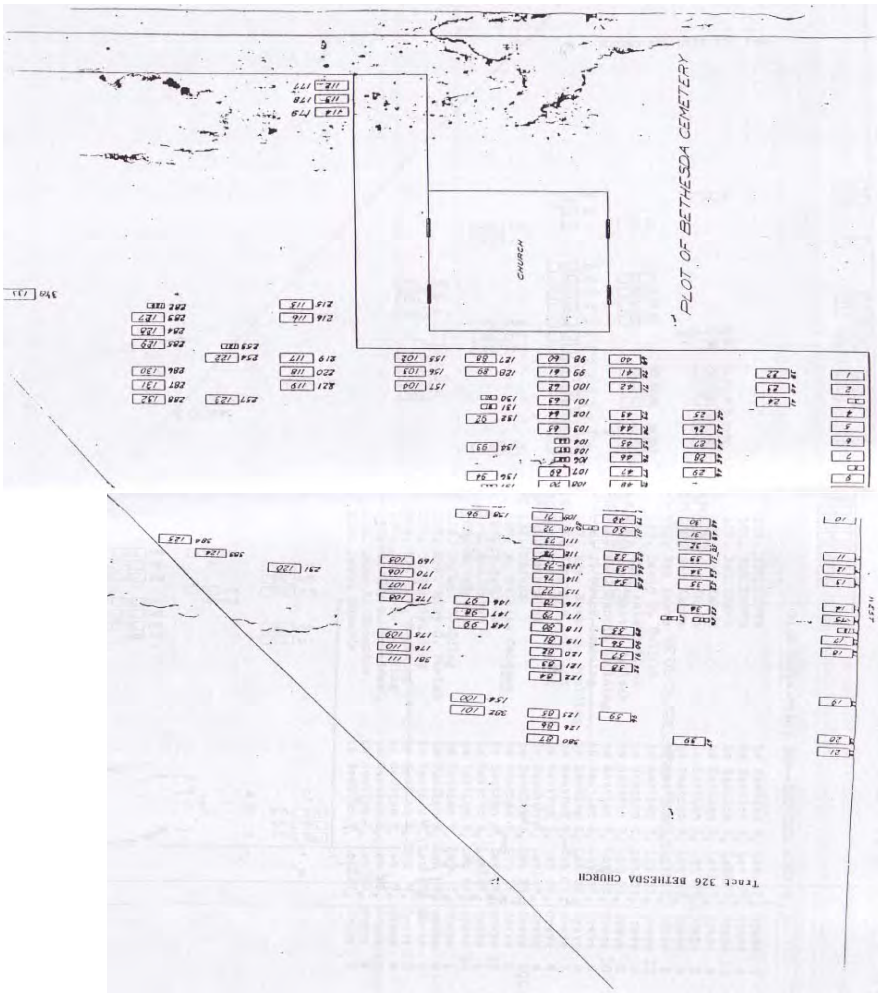
Illustration 28. Views of Bethesda Baptist Church. Reproduced from Luck 1941:2.

In 1940, Bethesda was shown on the Caroline County Road map, noted as a "church and cemetery."



Map 75. Portion of the 1940 road map of Caroline County showing Bethesda Baptist Church on modern-day Tract 326 as "church and cemetery."

On July 14, 1941, the United States government acquired the 8.8 acres from The Bethesda Church, R. A. Bullock, J. W. Garrett, G. W. Sale, Trustees, and their successors in trust, of Mica, Virginia for $7,150 (CC DB 114:401). This property included 133 marked burials. These burials were removed and relocated to Greenlawn Cemetery in nearby Bowling Green. The church building itself was torn down in 1950 (Wright n.d.).



Map 76. Plat of Bethesda Baptist Church and cemetery in 1941, reproduced from *Churches at One Time on the Reservations (Fraternal Bldgs Incl).*

Summary: In 1847, the 8.8 acres that comprises modern-day Tract 326 was sold by Adison and Sally Holloway for the purpose of building Bethesda Baptist Church, the only structure present on the property. Prior to the church's construction, the property was unoccupied. Bethesda Baptist members originated from Liberty Baptist Church. Bethesda was founded upon the principal of temperance. From 1847 until 1941, Bethesda Baptist served the community with the church and cemetery. At acquisition by the United States government, the burials at Bethesda were moved to Greenlawn Cemetery, and the church was torn down in 1950.

Tract 376 (Map Sheet 4, Quad D2)

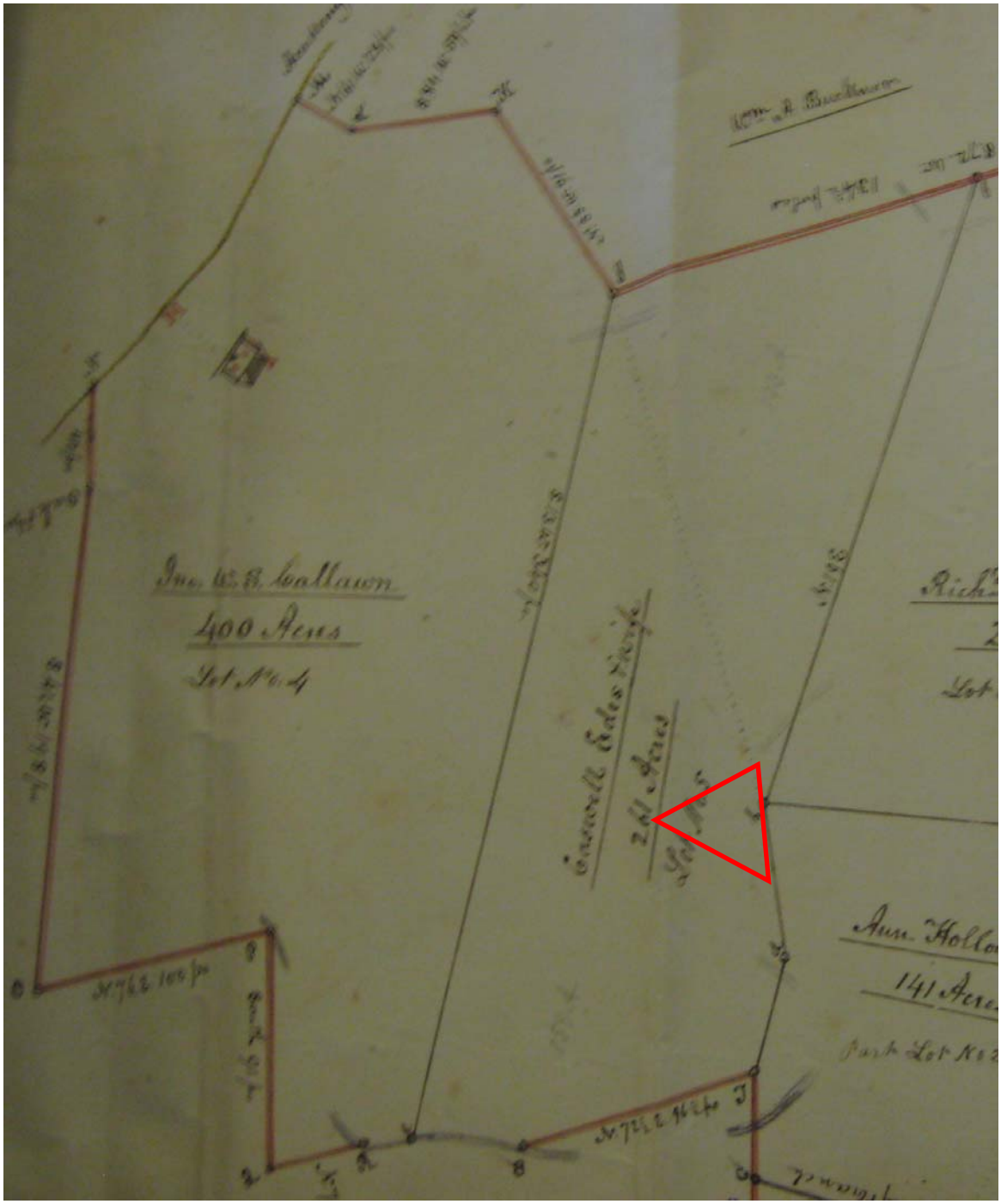
Occupation History: Inspection of the 1937 aerial photo shows a single structure in this triangular tract in Caroline County. In 1941, the government acquired the property for $9,500.00 as Tract 376, which encompassed 13.7 acres. Only one structure was noted

within the tract on the aerial photo, in the central portion of the property surrounded by open/cultivated land.

For the history of modern-day Tract 376 from *ca.* 1700 to 1855, see Tract 233, which shares an identical history in that period.

By September 1855, a portion of Bloom's Grove farm, including the location of modern-day Tract 376, plus other property, was included in the estate of William Callawn (Callawn vs. Callawn 1857, CRHC unindexed file of Caroline County Chancery Court Ended Papers). William Callawn died intestate and his estate was divided by the Chancery Court. Callawn's estate contained a total of 1,828 acres in two tracts or parcels, including one of 1,479 acres that included modern-day Tract 376. Callawn's estate was distributed among seven heirs (all over the age of 21), including his widow Elizabeth (who received her widow's dower), four of his children, one son-in-law and one granddaughter, who all received equal shares of the property.

Notable among Callawn's heirs was Caswell Eads, who had married Callawn's daughter, Lucy. Caswell Eads and wife received two tracts of land, consisting of Lot No. 5 (261 acres) and Part Lot No. 5 (70 acres), the former containing modern-day Tract 376. Eads was also allotted four slaves (Callawn vs. Callawn 1857). Eads and his wife were residents of Sumpter County, Alabama where they operated a valuable farm and had a family of five children in the 1850s (U. S. Census 1850). The Eadses almost immediately sold the land they inherited where modern-day Tract 376 is located. On September 24, 1855, Casewell and Lucy Eads sold 158 acres to John W. S. Collawn for $1,156.22. The property was described as, "a portion of the lot of land of 261 acres which was allotted to Eades in the partition of Wm. Callawn's estate…it is the portion that adjoins J. W. S. Callawn's land" (CC DB 48:572). At the time of this purchase, J. W. S. Callawn was already in residence on the adjoining land that he had inherited, where he had been paying taxes since at least the two years prior (CC LB 1:5). There is no indication that any occupations had been established on any of the 261 acres inherited by Casewell Eads.



Map 77. Portion of the plat map of the William Callawn Estate, showing Lot No. 5 distributed to Caswell Edes & wife, which includes the location of modern-day Tract 376. Jno. W. S. Callawn is in residence on the adjacent tract.

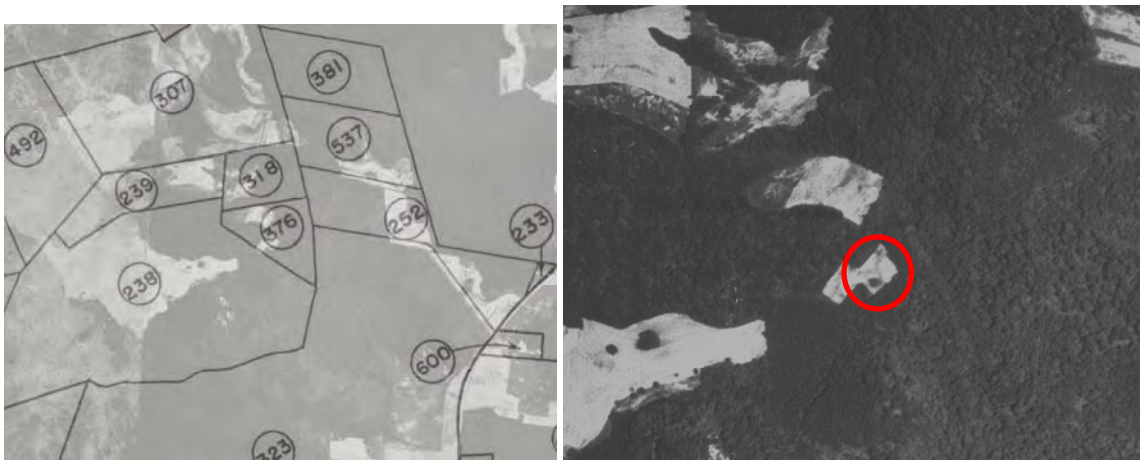
John W. S. Callawn and his wife, Judith Garrett Callawn, had at least two daughters, Bettie B. and Jane V. The 1864 Gilmer map shows no occupations in the area of modern-day Tract 376. John W. S. Callawn died in 1870, his real property was distributed to his heirs, and his personal property was sold at his estate sale, with many of

the items going to his widow (CC WB 34:106). In 1875, Bettie B. Callawn married F. M. Travis (CRHC 2004-040-061-083).

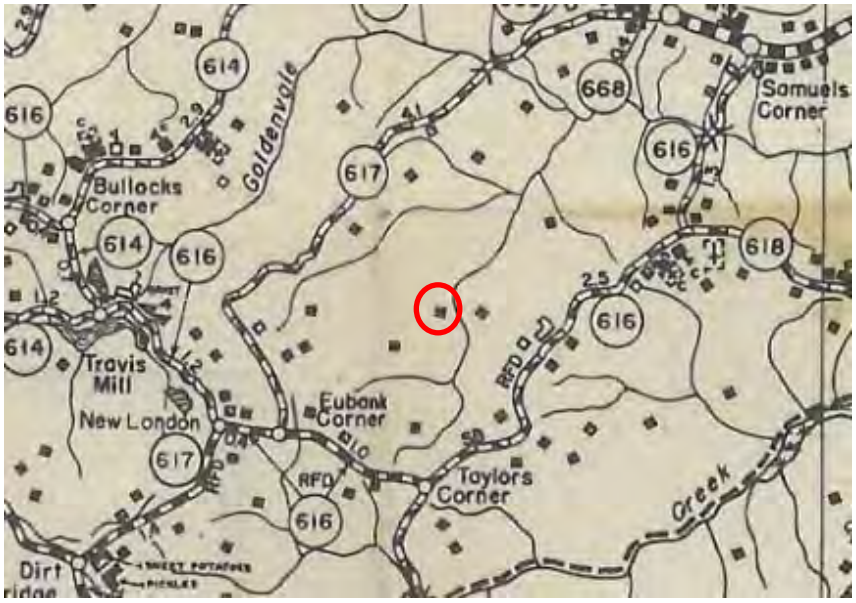
In 1911, Bettie Travis owned modern-day Tract 376, having presumably inherited it from her father. Bettie B. and F. M. Travis lived on the lands associated with Travis Lake to the north (see Tract 110), and there is no indication that they were in occupation on modern-day Tract 376.

On April 17, 1911, Bettie Travis and her husband conveyed 13.7 acres to Nancy Coleman (CC DB 78:242), the same property as modern-day Tract 376. Coleman's purchase most likely marks the beginning of occupation on the property. It is interesting to note that Coleman's husband, Harry Coleman (CRHC file #2004-040-088-030), owned the adjacent 14.5 acre parcel, which was also purchased from Bettie and F. M. Travis (see Tract 318). As a couple, the African-American Colemans owned a collective 28.2 acres in two adjacent parcels, and perhaps operated them together as a single farm.

In 1937, a single structure is visible within modern-day Tract 376, immediately surrounded by open/cultivated lands. A second section of cultivated land is visible in the northern part of the tract. The remainder of the tract is in forest. In 1940, Coleman's farm is shown on the Caroline County road map as "farm unit, in use," and was situated one mile south of Mt. Olive Church.



Map 78. Tract 376 (left), and the Nancy Coleman farm in 1937 (right).



Map 79. Portion of the 1940 road map of Caroline County showing the Coleman's residence on modern-day Tract 376 as "farm unit, in use."

Coleman retained ownership of the tract and maintained it as a farmstead until acquisition in 1941. On September 2, 1941, the United States government acquired the 13.7-acre tract from Nancy Coleman as Tract 376/Parcel 6 of the Eastern District of Virginia Miscellaneous case No. 1572-M (CC DB 115:213).

Summary: From *ca*. 1700, modern-day Tract 376 was part of Bloom's Grove Farm, owned by Thomas F. Royston, Sr., who willed it to his son, Thomas Royston, Jr., upon the elder's death in 1815. In 1838, the property on which modern-day Tract 376 is located was sold by Thomas Royston, Jr. to William Callawn, Sr. When Callawn's estate was divided in 1855, portions of the Bloom's Grove Farm plus other properties were distributed to his heirs, including his son-in-law and daughter, Casewell and Lucy Edes. That same year, the Edeses sold a 158-acre parcel out of their inheritance to John W. S. Callawn, who was resident on the adjacent parcel. J. W. S. Callawn died in 1870. Amongst his heirs was daughter Bettie. By 1911, Bettie owned the 13.7 acres, having most likely inherited it from her father. That year, Bettie Callawn Travis sold the parcel to Nancy Coleman, who appears to have been the first occupant on the land. Prior to 1911, there is no documentary or photographic evidence of occupation on Tract 376. Prior to this time, the 13.7 acres was a small, peripheral portion of much larger land tracts with occupation located elsewhere. After the 1911 purchase, Coleman occupied and improved the land, operating it as a farm. The farmstead observed on the 1937 aerial photograph can be attributed to Nancy Coleman, spanning from 1911-1941.

Tract 761 (Map Sheet 6, Quad E4)

Occupation History: Inspection of the 1937 aerial photo shows a single farmstead in this small, roughly rectangular tract in Caroline County. In 1942, the government acquired the property for $750 as Tract 761, which encompassed 19 acres.

Two structures, a dwelling and outbuilding, were noted within the tract on the aerial photo, situated at the end of a long driveway fronting on Route 622.

The history of this occupation on modern-day Tract 761 dates to *ca*. 1880, when the property was owned by T. J. Motley (also known as T. Judson Motley and Judson Motley). That year, he was a 34-year old farmer living with his family on modern-day Tract 761. In the census, his family was enumerated as his wife, Martha S. (34) who was keeping house, sons Harry (7) and an infant Motley, daughters Nannie (5) and Ida (3), along with Nelson Robinson (14) who "worked on the farm" (U. S. Census 1880).

On July 3, 1894, T. J. and Martha S. Motley sold a portion of the property to Robert P. Jones (CC DB 64:598). At some point between 1900 and 1905, Judson Motley died leaving his wife and children as his heirs. On July 5, 1905, widow Martha S. Motley along with heirs Harry and Clara Motley, Frederick and Ida (Motley) Shaddock, William and Nannie (Motley) Jordan, Gavan Motley and Bowie Motley conveyed the remainder of modern-day Tract 761 to Robert P. Jones (CC DB 78:75).

In 1910, Robert P. Jones lived on and farmed modern-day Tract 761. He was a 52-year old black farmer, joined by his wife Jennie (44, also known as Virginia), and their 5-year-old daughter Susie B. (U. S. Census 1910). In 1916, an R. L. Jones was noted as a farmer in Upper Zion, most likely the same Robert Jones that lived on modern-day Tract 761 (Fall 1989:357). In 1920, the Jones family continued to live on and farm modern-day Tract 761 with no recorded changes in their status or family composition (U. S. Census 1920). Three years later, only child Susie B. Jones married McKinly (also spelled McKinley) Jones (CRHC file #2004-040-109-046). By 1930, Robert P. Jones had died, leaving Jennie a widow with dower rights. Despite her rights to the land, she does not appear in the census for that year. Instead, modern-day Tract 761 was occupied by her only daughter's family: Mckinley Jones (31), wife Susie B. (24), daughters Virginia L (7) and Subrina L. (5), and sons Robert (3) and Ernest (1) (U. S. Census 1930). In 1937, the Jones farm was captured on an air photo. The small farm has a house and barn at the end of a long entrance drive south of Route 622, and the surrounding property is cultivated. Approximately half the tract is forested. It is interesting to note that although Jennie Jones owned adjoining Tract 762, having inherited it from her parents (CC DB 117:382), the Jones family obviously only occupied modern-day Tract 761 and modern-day Tract 762 was left heavily forested, with only one small structure visible accessed by a road from the Jones farm.

Map 80. Tract 761 (left) and the Jones farm (right) in 1937.

In 1940, widow Virginia Jones does appear as a member of her daughter's household with the notation that she lived in the same house five years earlier. And by 1940, the Jones household had grown substantially. Noted as living in the stretch of "Hwy. No. 622 from Martin's Corner to Upper Zion," head of household McKinley Jones (41) worked as a laborer at a saw mill, although undoubtedly the family also participated in subsistence farming on the land that they owned. The rest of the family consisted of wife Susie B. (34), daughters Lucille V (16), Suburnie (15), Gladis R. (7), and Doris (2); sons Robert (13), Earnest H. (11), Otis R. (9), William L. (7), Lorenso (5) and Mario (3 months). The final member of the household was mother-in-law Virginia Jones (73). All of the older children (ages 11 and up) were noted as attending school, but none of the other members of the household were listed as having employment outside the home (U. S. Census 1940). It is interesting to consider the possibility that McKinley Jones' occupation as a laborer at a sawmill, combined with the family ownership of an adjoining tract that could have served as a large wood lot, that the small structure visible on modern-day Tract 762 could have been a saw mill, although no evidence was located to support the hypothesis. In 1940, the Jones property was simply indicated as a "farm unit, in use" on the 1940 road map of Caroline County. The farm was situated between two pillars of the "colored" community in Upper Zion: Free Mission School (Tract 18) and Union Baptist Church (Tract 370).

Map 81. Portion of the 1940 road map of Caroline County showing the Jones property on modern-day Tract 837 as "farm unit, in use." The Jones farm is situation between Free Mission School (colored, Tract 18) and Union Baptist Church (colored, Tract 370).

On March 13, 1942, McKinley and Susie B. Jones along with Jennie (Virginia) Jones, widow, conveyed 19 acres to the United States government for $750 (CC DB 117:244).

Summary: The history of occupation on modern-day Tract 761 began in *ca*. 1880 with Judson Motley and his family, who lived on the land and farmed it until 1894 when he sold a portion of it to Robert P. Jones. In 1905, the remainder of the property was conveyed to Jones, a black farmer, who occupied and cultivated the land with his family until his death. In 1923, Jones' only daughter, Susie B. Jones, married Mckinley Jones. Together they took over the farm with widow Virginia Jones a member of the household at times. By 1940, the sizable Jones family continued to live on modern-day Tract 761, and farmed enough of the property for their own subsistence. However, Mckinley Jones was listed as a laborer in a saw mill. It is possible that he used the large Jones-family owned land next door as a wood lot for a sawmill operation. The Jones farm was situated conveniently between two pillars of the black community in Upper Zion: Free Mission School (Tract 18) and Union Baptist Church (Tract 370) until the property was acquired by the United States government in 1942.

Tract 770 (Map Sheet 5, Quad D3)

Occupation History: Inspection of the 1937 aerial photo shows a farmstead, with at least four small structures in roughly parallelogram-shaped tract in Caroline County. In 1942, the government acquired the property for $6,200.00 as Tract 770, which encompassed 216 acres. The four small structures were noted centrally within the tract on the aerial photo, situated directly south of the Y-shaped intersection of Routes 637 and 662.

The documented history of the land on which modern-day Tract 770 is located dates to as early as *ca*. 1840. At that time, the 403-acre tract which includes modern-day Tract 770 was surveyed by W. A. Moncure (CRHC file #2004-040-5000-21). Evidence

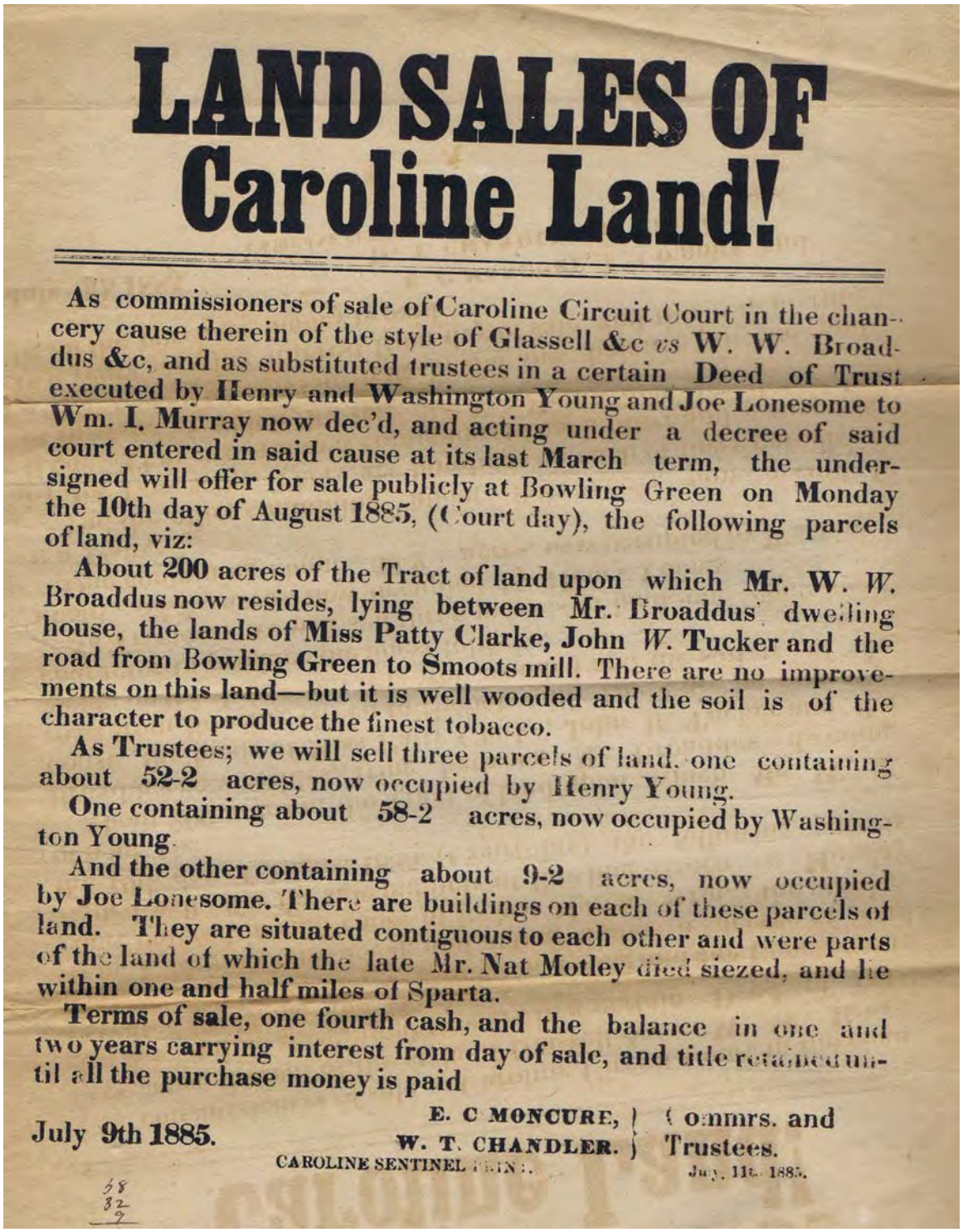
suggests that the land was possibly owned at that time by the father of W. W. Broaddus, but the primary documentation to substantiate the theory has not been located. At this time, modern-day Tract 770 was not occupied. In 1848, William W. Broaddus, noted in public records also as both Woodson W. Broaddus, married Lucy C. Motley (CRHC file #2004-040-038-003). Their family history is tied to the history of modern-day Tract 770.

In the following decade, the history of modern-day Tract 770 is related to the land ownership of W. W. Broaddus. In 1850, he was a nineteen-year-old farmer with an eighteen-year-old wife, Lucy C., and their one-year-old daughter. Although he did not yet own land, he did own six young slaves and was from a prominent local family (U. S. Census 1850, and 1850 Slave Schedule). By 1853, W. W. Broaddus had acquired the 403 acres and had begun to pay taxes on the land (CC Land Book No. 1:2).

In 1860, W. W. and Lucy Broaddus' family had expanded greatly, now consisting of five children (U. S. Census 1860). Broaddus owned the 403-acre tract that included modern-day Tract 770, but the main occupation was situated on modern-day Tract 176, leaving modern-day Tract 770 unoccupied and presumably utilized for agriculture and timber.

By 1870, W. W. Broaddus still owned the 403-acres that contained modern-day Tract 770 where he lived with his wife, eight children and a domestic servant (U. S. Census 1870). He was a farmer and the property he owned was valued at $8,000, along with $3,000 worth of personal property. As in the years previous, the main Broaddus farm was situated on modern-day Tract 176, and modern-day Tract 770 remained unoccupied. In 1880, the Broaddus family still lived and farmed in the same place (U. S. Census 1880).

The history of occupation on modern-day Tract 770 began no earlier than 1885. In that year, a total of 403 acres was surveyed by County Surveyor, F. M. Travis, as a result of the sale at auction of that land into several parcels on August 10, 1885, including modern-day Tract 770. The land was described as "about 200 acres of the Tract of land upon which Mr. W. W. Broaddus now resides [Tract 176] lying between Mr. Broaddus' dwelling house, the lands of Miss Patty Clarke , John W. Tucker [Tract 853] and the road from Bowling Green to Smoots mill [Route 673]. There are no improvements on this land—but it is well wooded and the soil is of the character to produce the finest tobacco" (CRHC file #2004-040-5000-21).



LAND SALES OF Caroline Land!

As commissioners of sale of Caroline Circuit Court in the chancery cause therein of the style of Glassell &c *vs* W. W. Broaddus &c, and as substituted trustees in a certain Deed of Trust executed by Henry and Washington Young and Joe Lonesome to Wm. I. Murray now dec'd, and acting under a decree of said court entered in said cause at its last March term, the undersigned will offer for sale publicly at Bowling Green on Monday the 10th day of August 1885, (Court day), the following parcels of land, viz:

About 200 acres of the Tract of land upon which Mr. W. *W.* Broaddus now resides, lying between Mr. Broaddus' dwelling house, the lands of Miss Patty Clarke, John *W.* Tucker and the road from Bowling Green to Smoots mill. There are no improvements on this land—but it is well wooded and the soil is of the character to produce the finest tobacco.

As Trustees; we will sell three parcels of land, one containing about 52-2 acres, now occupied by Henry Young.

One containing about 58-2 acres, now occupied by Washington Young.

And the other containing about 9-2 acres, now occupied by Joe Lonesome. There are buildings on each of these parcels of land. They are situated contiguous to each other and were parts of the land of which the late Mr. Nat Motley died siezed, and lie within one and half miles of Sparta.

Terms of sale, one fourth cash, and the balance in one and two years carrying interest from day of sale, and title retained until all the purchase money is paid

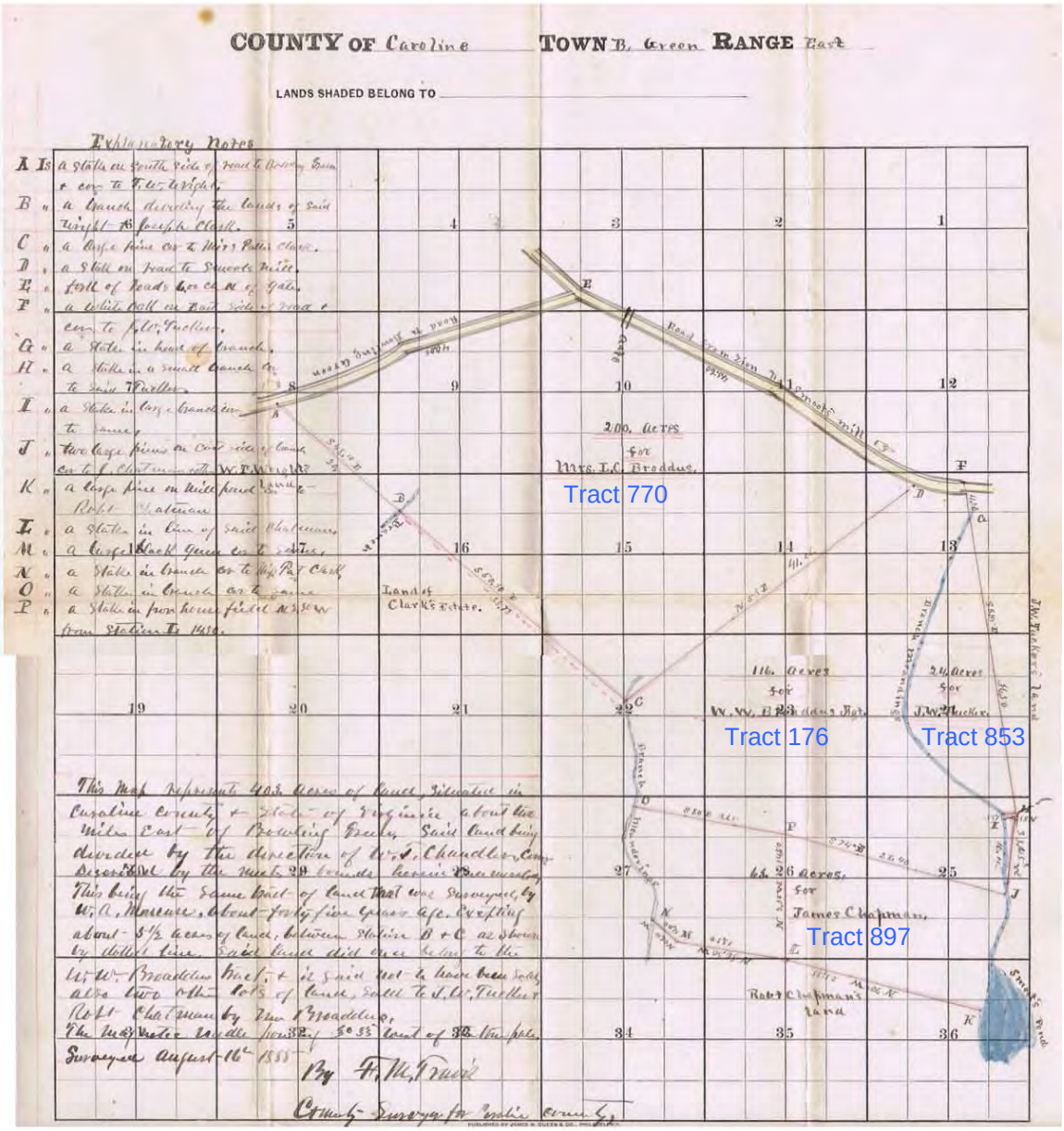
July 9th 1885.

E. C MONCURE, } Commrs. and
W. T. CHANDLER. } Trustees.

CAROLINE SENTINEL PRINT. July, 11th 1885.

58
32
9

Illustration 29. 1885 auction poster that includes the 200 acres that is modern-day Tract 770 (CRHC file #2004-040-5000-21).



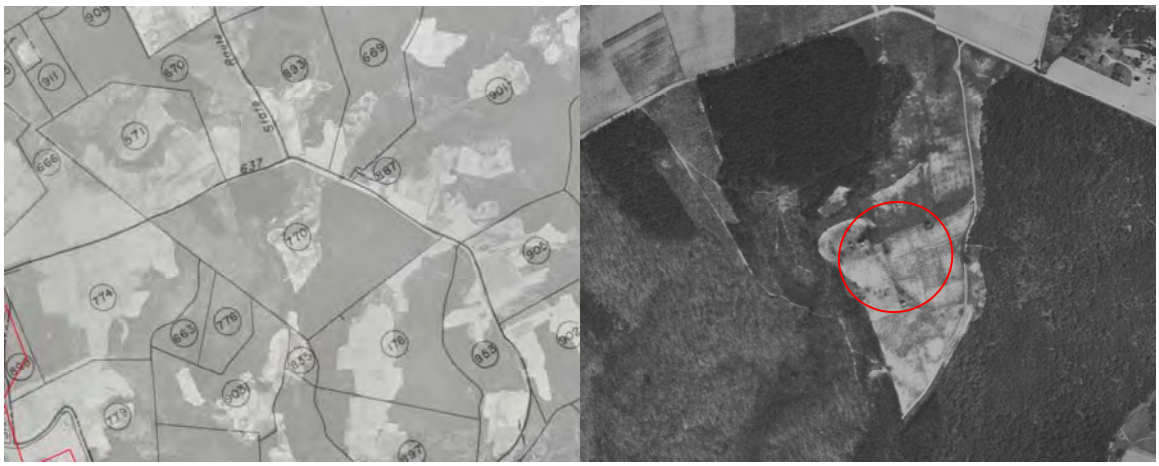
Map 82. 1885 survey that includes the 200 acres that is modern-day Tract 770 (CRHC file #2004-040-5000-21).

As the result of the August 1885 auction, the 403 acres was split into four separate tracts. The successful bidders were Mrs. L. C. Broaddus (200 acres, modern-day Tract 770), an agent for W. W. Broaddus (116 acres, modern-day Tract 176), J. W. Tucker (24 acres, modern-day Tract 853), and Robert Chatman (63 acres, modern-day Tract 897). W. W. Broaddus was able to retain the property where he was currently living, and his wife purchased the 200 acres of unimproved land. The remaining portions of the original 403-acres were sold to non-family members (CRHC file #2004-040-5000-21). Lucy C. Broaddus retained ownership of the 200-acres until her death in 1895 (CRHC file #2004-040-273-008). Upon her death, her heirs inherited the property that makes up modern-day Tract 770.

Despite the fact that the 200-acre parcel had passed to a new generation of Broaddus family owners, evidence suggests that it remained unoccupied. The unmarried children of W. W. and Lucy Broaddus remained occupants of the Broaddus household on modern-day Tract 176 (U. S. Census 1900). The married children had all left home and established households elsewhere. As late as 1910, the Broaddus household still consisted of head of household and widower William W. Broaddus (78) along with his two unmarried adult children, Ruth C. and Cornelius C. (U. S. Census 1910). They still lived on modern-day Tract 176, with modern-day Tract 770 unoccupied.

Cornelius C. Broaddus made his move to modern-day Tract 770 in 1916. On October 19th of that year, Cornelius purchased the interests in the 200 acres from his family members R. Bagby Broaddus, W. W. Broaddus, A. B. Broaddus and Charles P. Powers (CC DB 84:219). This purchase marks the initial occupation of modern-day Tract 770 by Cornelius C. Broaddus. On September 27, 1922, Broaddus purchased an additional 16 acres from Randolph T. and Louise Snow Broaddus (CC DB 91:452).

In 1930, Cornelius C. Broaddus was 60 years old, single, and living on modern-day Tract 770 (U. S. Census 1930). In 1937, Cornelius C. Broaddus' farm was captured on an aerial photograph. Approximately one third of the property was in cultivation and the remainder was forested, in varying stages of density, suggesting that the land had been timbered. All four of the structures on the farm were small.

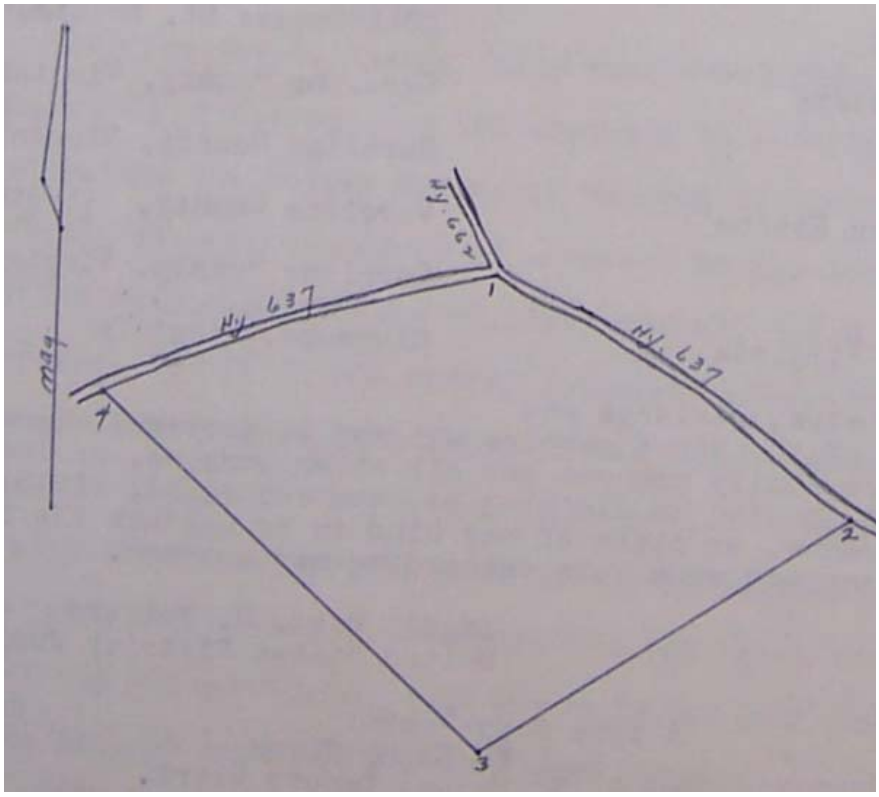


Map 83. Tract 770 (left) and the farm of Cornelius C. Broaddus (right) in 1937.

In 1940, Cornelius C. Broaddus, aged 70 and single, lived alone on modern-day Tract 770, where he had been in occupation five years previous. He owned the farm, which was valued at $1,000. At the time, he was unable to work. It is possible that he hired people to maintain the farm (U. S. Census 1940). On the 1940 road map of Caroline County, Cornelius Broaddus' farm is marked as a "farm unit, in use."

Map 84. Portion of the 1940 road map of Caroline County showing the Broaddus farm on modern-day Tract 770 as a "farm unit, in use."

On February 25, 1942, Cornelius C. Broaddus conveyed 216 acres to the United States government for $6,200 (CC DB 117:148). This property was Tract 770.



Map 85. Modern-day Tract 770 at acquisition in 1942 (CC DB 117:156).

Summary: Although the land that constitutes modern-day Tract 770 has a documented history that stretches back to *ca*. 1840, the 200 acres was part of a larger 403-acre farm owned by W. W. Broaddus and was used for agriculture and timber, rather than occupation. The Broaddus family lived on nearby modern-day Tract 176. In 1885, the Broaddus farm was split up and sold at auction. Lucy C. Broaddus purchased the 200 acres where modern-day Tract 770 is located and kept it as part of the family farm. Upon her death in 1895, its ownership passed to her heirs. The tract remained unoccupied until 1912, when unmarried Cornelius C. Broaddus purchased the remaining interests in the 200 acres from his family members and established his occupation there. In 1922, he added 16 more acres. His farm consisted of four small buildings. He remained single and on the farm alone. In 1940, at the age of 70, Cornelius could no longer work, but remained alone on the farm. He might have had hired workers. In 1942, the United States government acquired 216 acres from Cornelius C. Broaddus for $6,200.

Tract 837 (Map Sheet 4, Quad A9)

Occupation History: Inspection of the 1937 aerial photo shows a single structure in this small, square tract in Caroline County. In 1942, the government acquired the property for $2,000.00 as Tract 837, which encompassed 0.5 acre. Only one structure was noted within the tract on the aerial photo; Smither's Store, situated directly fronting on the Y-shaped intersection of Routes 623 and 670.

The history of use and occupation on modern-day Tract 837 beings in *ca.* 1750, not with Smither's Store, but with a tavern known as "The Trap." The Trap was assigned archaeological site number 44CE84, but little research and no archaeological investigations were conducted there initially (Ayres and Beaudry 1979). The ownership history of the property is spotty, but can be picked up at intervals. It was located directly opposite the former Delos post office. The house known as 'Trappe' was built *ca.* 1750. "The original house of Trappe was a small frame building of the one and one-half story type, with a rock chimney. This was pulled down and a two-story frame building, which was much larger[,] erected. This house had an attic in it and had very tiny windows" (Farmer 1937g).

Illustration 30. Trappe, *ca*. 1937.

From 1777-1781, Peyton Stern held a tavern license in St. Mary's parish, at a location that has been associated with The Trap (Campbell 1954:413). Farmer (1937g) reported from an oral history informant, "During the War of 1812 many soldiers stopped here and hunted in the adjoining woods and fields for rabbits and other game. The people living in that community were very familiar with the reports of their guns."

The Trap had, "a large race track where the rich planters very often came with their fine horses. It is said that much money exchanged hands here" (Farmer 1937g). It is unclear how long Stern owned and operated The Trap. By 1838, eight landowners paid taxes in the area known as Trap, including Elizabeth Carter, who owned 72 acres (Fall 1989:393), presumably The Trap, which is modern-day Tract 837. The small community focused around the tavern only had a post office from 1853 until 1856 (Fall 1989:393).

Historian Farmer (1937g) noted:

> Slave dealers from the south often came to this tavern and bought slaves. These slaves were put in a small room in the attic. It is said that they would take the bed linens from the beds and tie them together and use them as a means to escape through the tiny windows. There were finger marks left by them on the weatherboarding where they clawed it on their way down to the ground.

The 1864 Gilmer map shows the location of The Trap at the distinctive Y-shaped intersection. That year, it was owned and operated by "Mrs. Carter," presumably Elizabeth Carter.

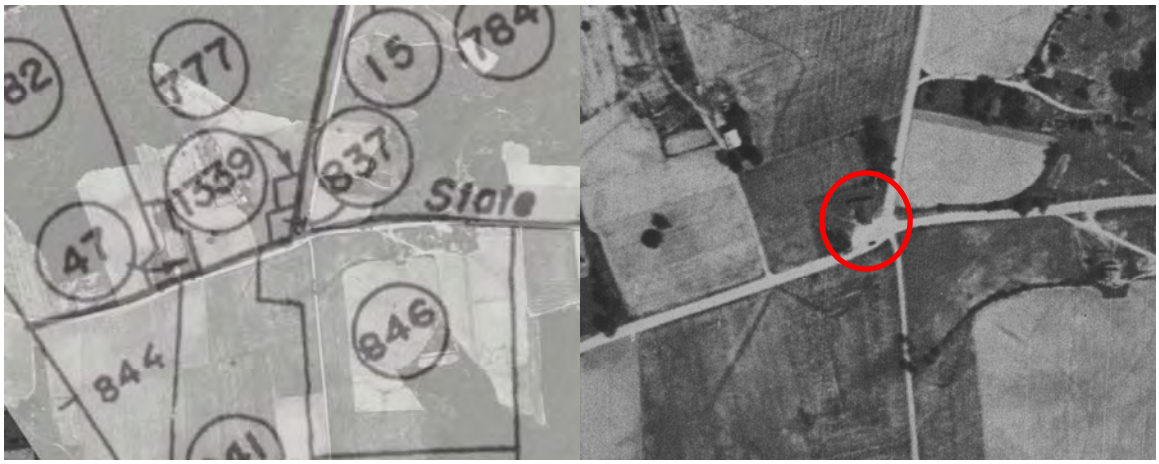
Map 86. The Trap and Mrs. Carter on the 1864 Gilmer map.

Fall (1989:393) describes, "On a hand-drawn map of the NEW LONDON area near here, TRAP was shown as on the mail route of 1881 between PORT ROYAL & BOWLING GREEN, south of NEW LONDON." By 1897, the small community at the Y-intersection got a new post office, and was now called Delos (Fall 1989:379). According to Farmer (1937g), the second structure known as Trappe was "taken down about 1900, and there is nothing left to mark the site of this noted old building." The Trap was apparently operated as a tavern until around that time. The chain of title is unclear, but it is known that the location had transitioned from that of a tavern to a small store at the Y-intersection now known as Delos.

By the early 1920s, the half-acre parcel that became modern-day Tract 837 was owned by L. E. Martin, a prominent member of the Bowling Green community. Martin was one of the co-founders of Bowling Green's Union Bank & Trust Company. Martin and his wife owned land in town and lived on Main Street (Fall 1989:52-53). Martin also served the town as Mayor for many years (Fall 1989:61). Although Martin owned the half acre, he did not live there, nor is there any evidence that he operated a business there himself.

In 1924, J. D. Smithers was a merchant in Delos, presumably at modern-day Tract 837 as a tenant of Martin's (Fall 1989:379). On July 24, 1925, J. D. Smithers bought the half acre from L. E. Martin and his wife (CC DB 94:502). After that, Smithers and his wife Ida lived at and operated what was known as Smither's Store in Delos. This was the same location as The Trap tavern, and modern-day Tract 837.

In 1937, J. D. Smither's store is visible on the aerial photograph as a single structure at the distinctive Y-intersection in Delos. The well-worn area in front of the store indicates the amount of traffic that the store received from the community, from all directions.



Map 87. Tract 837 (left), and J. D. Smither's store at the Delos in 1937 (right).

On the 1940 road map of Caroline County, Smither's Store is barely discernable in the tight squeeze of occupations noted in the heart of Delos. Along with the store, there is a church, and a number of farms nestled within the distinctive Y-shaped intersection.

Map 88. Portion of the 1940 road map of Caroline County showing J. D. Smither's property on modern-day Tract 837 in Delos as "store or small business establishment."

Smither's Store was a hub in the small community. Many people remembered Mr. Smithers and his store in great detail.

Thelma Bruce Greenwood: "…people walked miles to our house to use the telephone between Bowling Green and Port Royal. Mr. Smithers that had the country store had a telephone, and we had a telephone. That was all the telephones" (Morton and Morton 2009:105)

Rose Hicks Farmer: "And our house was on the right across from St. Paul's Church, a colored church. And just below that was Mr. John Smithers's store, and that's where we were.…Now, Gray's country store was at Upper Zion, but Smithers, Mr. John Smithers had a store at Delos, and that's where all of us came from, Delos. John Smithers, I've got

a picture of him. He lived in the back. It had sort of an attic, but I don't think it was any living quarters" (Morton and Morton 2009:167).

Illustration 31. John Smithers at his store in Delos.
Photo courtesy of Rose Hicks Farmer.

Mary Trice Lambert: "We had hogs, and there was a country store about three or four miles from us, his name was Mr. Smithers. And he exchanged and took anything in, and so we had hams and we had a smokehouse, so once you smoked the hams, they did very good for all winter. So we traded hams and got good money for the hams, you know, people come for that. We had potatoes, sweet potatoes, Irish potatoes, we brought that in trade. Eggs, we had lots of eggs, they traded eggs. And some people had several cows, but we didn't have those many, we had ten children. We traded, for sugar, and we would bring flour in, meal, because a lot of people didn't have a farm. They just had a small plat of ground, maybe a garden and that was all. So they would come in and get the flour and

the meals from the trading. It was just like money. You know, we didn't feel poor doing it."

"And Mr. Smithers and his wife owned the store, and they were glad to get everything we were bringing in because somebody was coming in to buy it who just had a little acre of land, and they needed the flour, and they needed the cornmeal and the eggs and the hams they brought in. And they sold yardage goods, too, so my mother would come and she'd exchange a couple dozen eggs for some yardage to make us a dress. He sold thread."

"And people would meet in that country store, and they'd exchange news, you know, news in the county, what's happened, what's going on. And they loved to chat, and they had these big barrels of nails, and they'd sit on those barrels, and they would chat and loved the fellowship of one another."

"And Mr. Smithers was so kind, he would never bill people. [Y]ou had accounts, too. And if it got up a little bit high, he says, "Now, this is not a bill, but I'm just passing you this, and this is what you owe now." But he never billed us, never billed us, per se. If we were in, sometimes we'd ask him, my mother would say, "Well, how much do I owe you now?" She would come in, and then she'd bring in maybe more hams or something else" (Morton and Morton 2009:228-231).

Lucille Trice Tompkins: "My father, when he would go up [to Mr. Smithers' store] at the evening, he would always bring a treat back to us. It could be an apple, could be a little bag of candy, or just something. John Smithers' store, the store I'm telling you about, he had that [canned pineapple]" (Morton and Morton 2009:227).

Lucille Trice Tompkins: "But getting back to the fact that Delos, of course as I say, was a main store that we would go to do the trading. Mr. Smithers, John Smithers was the man that owned that store. And he was so distraught over having to leave there that he killed himself, he shot himself through the mouth. And it was just something—it was just a traumatic thing for so many people to have to leave, you know, that area after knowing no other lifestyle, really. And of course we had such close friends and family there, all of us" (Thompkins 2007:13).

Illustration 32.

Top and bottom: Mr. Smithers' store at Delos. "That was a gathering placed for the neighborhood. Mr. Smithers' store had everything from salt fish to yard goods."

Photo courtesy of Thelma Bruce Greenwood.

Photo courtesy of Lucille Trice Tompkins.

In the 1940 census, John D. Smithers was listed as the head of his household of two (along with his wife), as a store owner and clerk who worked a reported 90 hours a week at his job (U. S. Census 1940). J. D. Smithers owned and operated his store in Delos, as a hub of that small community, from 1924 until government acquisition in 1942, the same year that J. D. Smithers died (CRHC file #2004-040-387-021). The United States government acquired the half acre for $2,000 (CC DB 117:150).

In 2001, the archaeological site, 44CE48, was shovel tested. Minimal artifacts were recovered and the site was recommended Not Eligible for inclusion in the National Register of Historic Places due to the extent of disturbance there (Cultural Resources, Inc. 2001). However, in 2008, FAPH archaeologist John Mullin assessed the location designated as 44CE84, associated with The Trap. Mullin reported, "Surface indications of at least three structures, ie bulldozed artifact scatters, mostly ironstone, mold-blown glass and window glass. Some brick crumbs. No definite foundation remains intact. Some old Shade trees standing" (Mullin 2008). The modern-day area of 44CE84, formerly The Trap, and formerly Smither's Store in Delos, is currently the location of Army development. After further investigations, Mullins (2008:42) recommended, "Further investigations are recommended in the expanded east side of the site to determine if intact subsurface cultural features or cultural deposits are present," and that the site should be considered Potentially Eligible.

Map 89. Location of 44CE84, formerly The Trap, and formerly Smither's Store in Delos.

Summary: The earliest recorded occupation of modern-day Tract 837 is in *ca.* 1750, with a one-story structure known as Trappe that served as a house/tavern, which has been assigned the designation 44CE84. From 1777-1781, Peyton Stern had a license for a tavern, believed to be Trappe, also known as The Trap. In its days as a colonial tavern situated along one of the main roads, it served as a place that housed travelers, provided a bar, held horse races, sold slaves and served as a community hub. In the period from 1838 to 1864, The Trap was associated with Elizabeth Carter, who apparently owned and operated the tavern. At some point in its history, the original structure was removed and a 2-story structure was built in its place, which continued to operate as a tavern. It is unclear what happened to The Trap or who owned it after the Civil War. In *ca*. 1900, the structure was torn down. In the early 1920s, the small, half

acre lot where The Trap had been located, was owned by prominent Bowling Green resident L. E. Martin. By 1924, a new store building had been built, which was leased to J. D. Smithers. The following year, Smithers purchased the property. From 1924 until 1942, Smithers lived there with his wife and operated the store. It was a hub of Delos, where people bought and bartered goods, as well as traded news. J. D. Smithers was remembered as a kind, generous man who took his own life at the loss of his store for the creation of Camp A. P. Hill.

Tract 978 (Map Sheet 7, Quad J7)

Occupation History: Inspection of the 1937 aerial photo shows three sets of buildings in this irregular-shaped tract in Caroline County. In addition, the acquisition map noted the presence of a cemetery within the tract. In 1942, the government acquired the property for $600.00 as Tract 978, which encompassed 26 acres. Three sets of buildings were noted within the tract on the aerial photo, all within the western half of the property surrounded by open/cultivated land. It appears that the clusters represent buildings that are all part of a single farmstead with one central residence and associated support buildings.

The history of modern-day Tract 978 begins with Sir Thomas Lunsford, who immigrated to Virginia in 1649 after siding with the Royalists in England's Civil War (Lee 1903:800). "On October 24, 1650, a grant made unto Sir Thomas Lunsford Knight and Baronet of 3423 acres of land lying upon a Bay on the South side of Rappahannock—the said land being due unto the said Sir Thomas Lunsford by and for the Transportation of sixty five persons into the Colony" (Pratt 1997:69).

By 1653, Lunsford was dead and his daughter, Katherine, inherited the lands in the Lunsford grant (Lee 1903:800, Pratt 1997:43). In 1680, Katherine married Ralph Wormley [also spelled Wormeley], thus giving him claim to the Lunsford grant, and the location of modern-day Tract 978 (Pratt 1997:25). Wormley combined the Lunsford grant with his own holdings, which gave him ownership over 11 miles of land along the south bank of the Rappahannock River, from Green Bay to Peumansend Creek (Pratt 1997:25). Together, Ralph and Katherine Wormley had two daughters, Elizabeth and Katherine, who inherited the Lunsford patent in their turn (Pratt 1997:43).

In 1703, Elizabeth Wormley married John Lomax (Pratt 1997:43). Modern-day Tract 978 is located inside the property owned by John and Katherine Lomax from the original Lunsford patent, with Elizabeth's inherited portion being 2,573 acres (Pratt 1997:52). In the period 1703-1704, Lomax built a house that he called "Portobago" [also spelled Port Tobago, Portobacco, Port Tobacco, etc.], a name that the whole plantation was known by, and that is still used for the area (Pratt 1997:51). The Portobago mansion was built on lands north of the Rappahannock River, outside of modern-day FAPH and Tract 978. John and Elizabeth Lomax's first son, Lunsford Lomax, was born at Portobago in 1705. In 1742, he married Judith Micou, and together they had a son, Thomas Lomax, in 1746. Thomas Lomax inherited Portobago upon his father's death in 1772 (Pratt 1997:53).

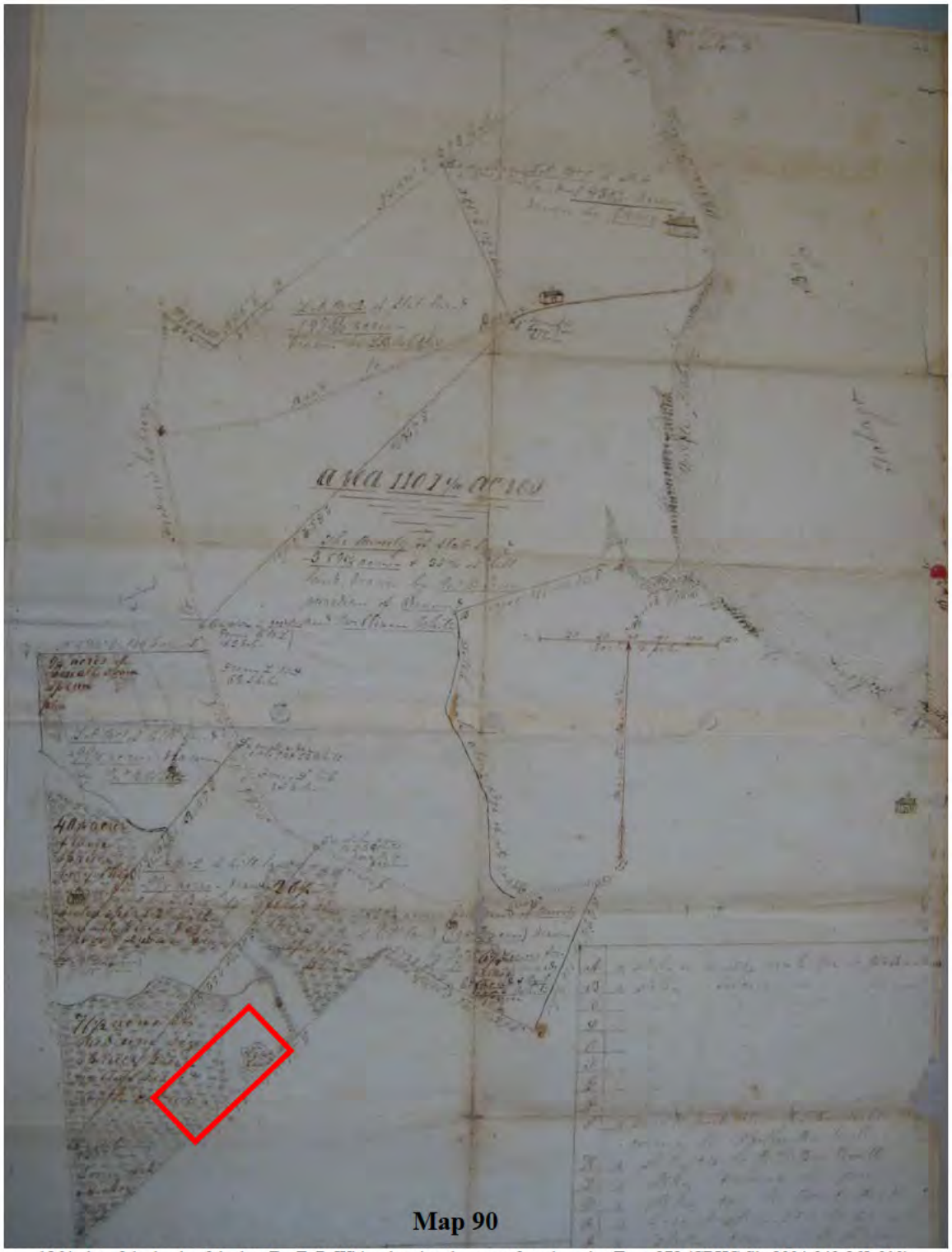
Thomas Lomax married Ann Corbin Tayloe and together they had ten children. Thomas Lomax held the Portobago property and lived in the house with his family until his death on October 17, 1811 (Pratt 1997:57-58). John Tayloe Lomax was appointed as the commissioner for his father's estate. On January 19, 1815, the "Portobaga" property was offered at public sale to the highest bidder. The property was sold for $33,050 to Robert Payne Waring, who was acting on behalf of John Waring. The tract of land included 606 acres and seven parcels, and was known as "Port Tobaga" (loose deed in CRHC file #2004-040-263-016). A year after the purchase, John Waring obtained fire insurance coverage from the Mutual Assurance Society for his Port Tobago property, which included a dwelling, kitchen and laundry. Thus it appears that Waring was in residence at Port Tobago. Although this property included the location of modern-day Tract 978, the occupied mansion was located off FAPH lands.

According to historian Pratt (1997:59), "John Waring sold the 'Portobago' property in 1835 to Dr. Edmund Pendleton White." Dr. White was the son on John White and Martha Bibb Key. Dr. White was married to Anne Champ Battaile, the only daughter of the Episcopal minister, Reverend Lawrence Battaile and Anne Hay Taliaferro of Prospect Hill (Luck 1941:42-43). In 1850, Dr. White's household consisted of himself (age 46), his wife, Ann C. (age 43) and three sons, John (age 12), Lawrence (age 8), and Edmund (age 1). The household also included Robert Puller (age 22), who served as the manager of Port Tobago (U. S. Census1850). Dr. White maintained a medical practice in Port Royal. (Fall 1982:375). He was also an active member of the Kilwinning Cross Masonic Lodge when it was located in Port Royal. Dr. White received a Masonic funeral upon his death in 1856 (Fall 1982:382).

When he died on August 14, 1856, Dr. White owned lands "situated on the west bank of Port Tabago Bay in the County of Caroline State of Va and contains 1107 8/10 acres of which 711 acres are river bottom—the rest hill land. The bottom land is all open. Of the hill land 155 acres are in wood…On the right of Road from Tapp'ok [Tappahannock] to Fred'burg [Fredericksburg] there are 746 9/10 acres on the left 361 ¼ acres" (CRHC file 2004-040-263-010). The partition of Dr. White's estate took place over a period of several years. On October 12, 1863, there was a partition of slaves of the estate of Edmund P. White, being held by Ann C. White as her dower. In total, there were 16 slaves ranging in age from 2 to 62 years, with a total value of $35,300. Son E. C. G. White received five slaves valued at $9,300 total, through his guardian, John T. Lewis (CRHC file #2004-040-263-016).

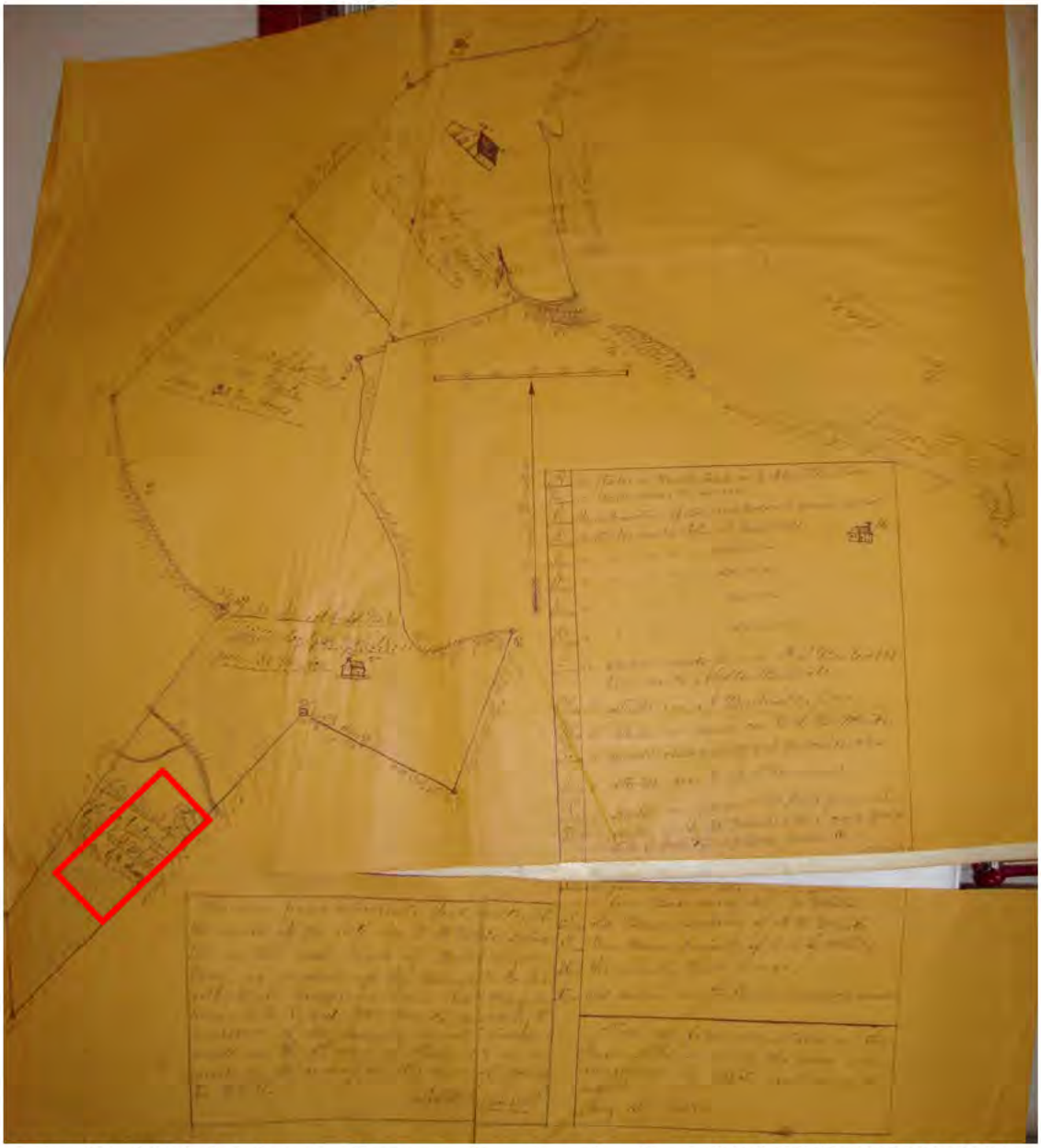
In March 1864, Dr. White's lands were divided up amongst his heirs as a result of a petition by S. W. White (CRHC file 2004-040-263-010). The area where modern-day Tract 978 is located falls within a parcel of land "462 9/10 acres-[balance] of <u>minority</u> of hill land (<u>198 acres</u>) drawn by Jn'o T. Lewis for his wards Edward & Wil. White." The area of the parcel where modern-day Tract 978 is located encompasses a portion of "Low Land," as well as "medium size spruce pine…with cedar." The southeastern boundary of this lot persevered through time and became part of the boundary of Camp A. P. Hill at acquisition. Although five separate houses are depicted on the plat of Dr. White's estate,

including White's home of Portobago, none of them fall within modern-day Tract 978, and it would appear that any occupants of these houses would have been tenants during Dr. White's ownership of the property. No structures were depicted in the vicinity of modern-day Tract 978 on the 1864 Gilmer map.



1864 plat of the lands of the late Dr. E. P. White showing the area of modern-day Tract 978 (CRHC file 2004-040-263-010).

In 1868, the lands from Dr. White's estate were in chancery court where commissioners were assigned to divide them equally in the case of White vs. White (CC WB 33:228-231). Lot No. 1 contained 184 11/12 acres flat land, 68 acres of hill land, one cabin and three corn houses, middle and lower fisheries. In the division, Lot No. 1 was drawn by E. C. G. White. In addition, "further report that I Lot No. 1 drawn by E. C. G. White there is a new barn [indicated as T on plat] built and paid for out of the income of the parties by their guardian, John T. Lewis, while the land was held jointly, costing six hundred and fifty dollars, and as it is desirable to have like improvements erected on Lot No. 2, we have concluded to make E. C. G. White pay to William White the sum of three hundred and twenty-five dollars, it being one-half of the value of said barn, to make their shares equal" (CC WB 33:228-231). It appears that White's heirs were in occupation at Portobago, with various tenants in occupation, although none within modern-day Tract 978.



Map 91. 1868 plat showing the area of modern-day Tract 978 (CC WB 33:228-231).

In the following year of 1869, Edmund C. G. White conveyed two parcels of land to Lawrence B. White. The parcels were described as "both shares or allotment of Port Tabago Farm as inheritance from late Father Doctor E. P. White assigns by commissioners Court." One parcel was identified as 68 acres of hill land, which contains the modern-day location of Tract 978. The conveyance was made "in consideration of board, clothing, tuition for two years, fuel lights, and washing & medical fees, all to be furnished" to E. C. G. White per annum by L. B. White and his heirs during the natural life of E. C. G. White (CC DB 53:346).

By 1876, Lawrence B. White had amassed 549 acres from his father's estate by inheritance and purchase from family members (Pratt 1997:62). Lawrence B. White lived

in the Portobago house until he built his own house, called Planna Terra, elsewhere on the estate, the precise location of which is unknown. Neither house was located within modern-day Tract 978.

Beginning in 1884, Lawrence B. White began selling small parcels out of his landholdings to Silas Green, noted in the deed records as "colored." On July 3, 1884, White sold Green 10 acres (CC DB 61:84). On March 30, 1888, White sold Green an additional 10 acres (CC DB 64:131). Finally, on March 2, 1905, L. White and A. Richardson sold Green a final 6 acres (CC DB 77:188). Together, these three tracts make up the 26 acres of modern-day Tract 978. The piecemeal acquisition of land parcels accounts for the unusual shape of Tract 978. Prior to Green's purchase of these parcels, modern-day Tract 978 was part of larger landholdings, on which the owners were known to live elsewhere. Silas Green appears to have been the first person to occupy and improve the lands in modern-day Tract 978.

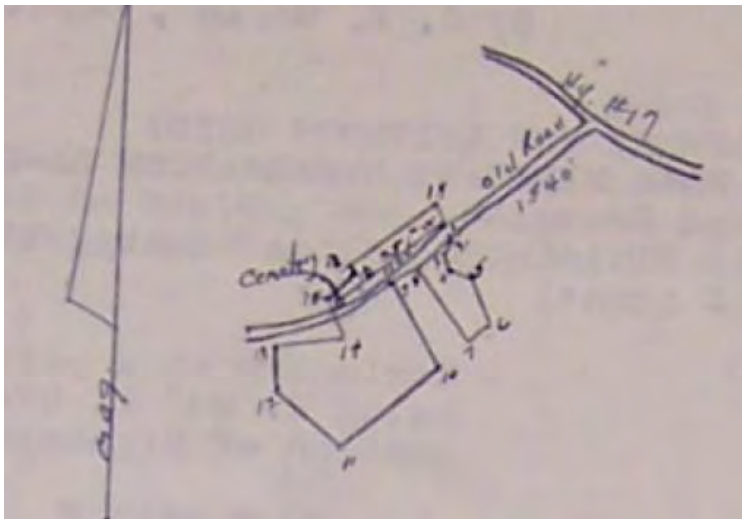
Once Green acquired the 26 acres, he maintained ownership, began occupation and improved the property. In 1920, Silas Green was recorded as a 70-year old mulatto, living in Caroline County, and married to Mary E. Green (United States Census 1920). In 1937, three sets of small structures were observed on modern-day Tract 978, most likely representing a farmstead with outbuildings, but possibly representing different improvements on the three different parcels that were acquired separately.

Map 92. Tract 978 (left), and the Silas Green farm in 1937 (right).

In 1940, the area of Silas Green's property shows a single farmstead, which supports the theory that the three clusters of buildings on modern-day Tract 978 represent a single farm with a dwelling and outbuildings.

Map 93. Portion of the 1940 road map of Caroline County showing Silas Green's farmstead on modern-day Tract 978 as "farm unit, in use."

Silas Green died at some point after 1920 and prior to acquisition in 1942, but his estate still owned the property, which was being managed by Mary Young of Port Royal (CC DB 119:305). On October 26, 1942, the United States government acquired the 26-acre tract from the estate of Silas Green for $600 as Tract 978, "subject, however, to the use of the cemetery located on a parcel of land." The location of the cemetery was noted on the acquisition maps (CC DB 119:300). This cemetery was not noted on previous maps or on previous deeds, which suggests that it was a more recent part of the land history, possibly being established as a family plot after Silas Green's purchase of the lands that make up modern-day Tract 978.



Map 94. Tract 978 in 1942, indicating cemetery (CC DB 119:307).

Summary: In 1650, Thomas Lunsford received a patent on the land where modern-day Tract 978 is located. Lunsford's daughter, Katherine, inherited the patent in 1653. She married Ralph Wormley, and the Lunsford patent became part of Wormley's vast landholdings on the south shore of the Rappahannock River. Wormley's daughter, Elizabeth, inherited the portion of the Lunsford patent where modern-day Tract 978 is

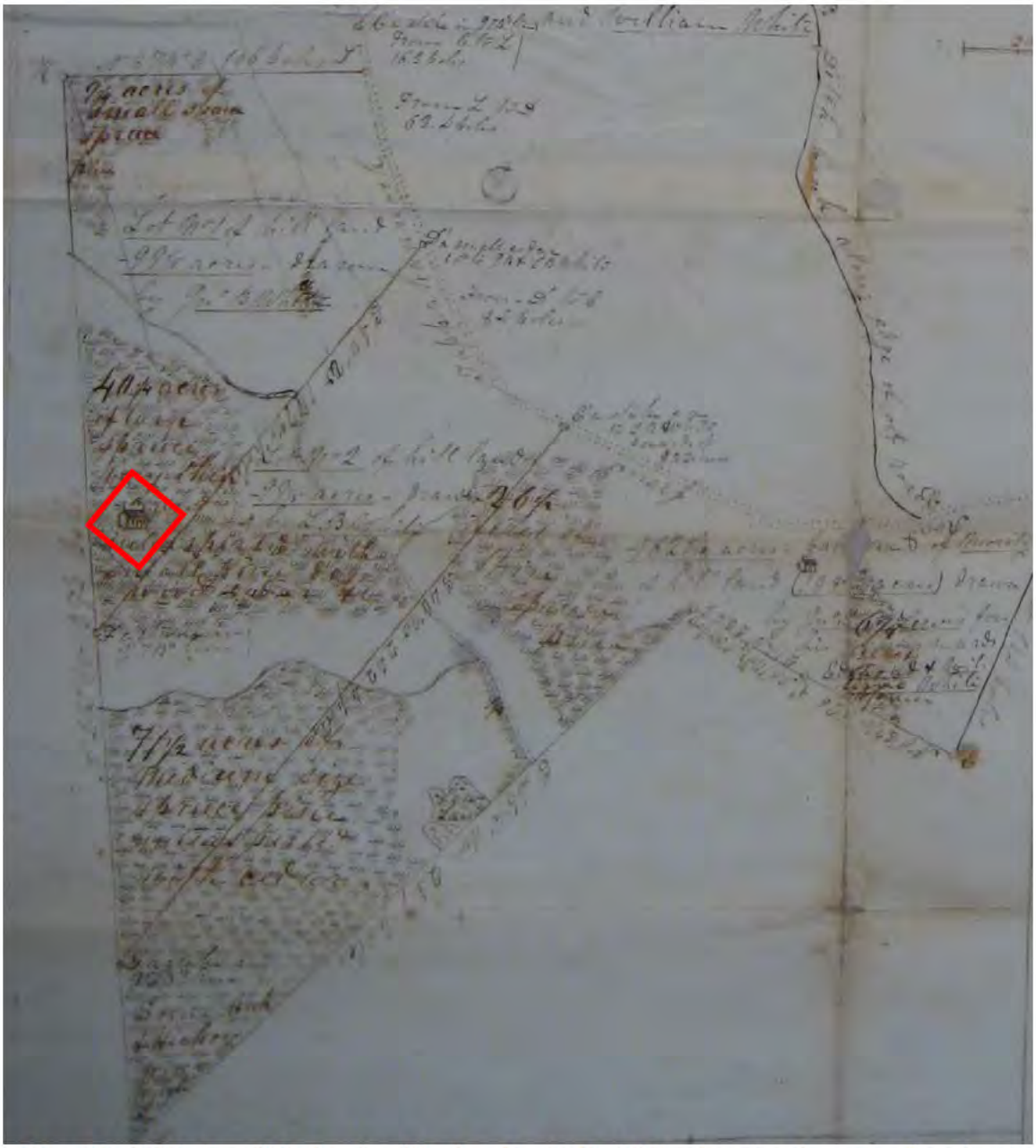
located. She married John Lomax, who built the Port Tobago manor house on the property in 1703. The property stayed in the Lomax family until 1811 and the death of heir Thomas Lomax. In 1815, Port Tobago was sold to John Waring, who in turn sold the property to Dr. Edmund P. White in 1835, who lived at Port Tobago until his death in 1856. In 1864, White's estate was partitioned, and the lot on which modern-day Tract 978 is located was drawn by Jonathan T. Lewis for his wards Edward and William White. White's estate was re-partioned in 1868 and the lot on which modern-day Tract 978 is located was again drawn by E. C. G. White. The following year, Edmund White conveyed this property to his brother, Lawrence, who kept his accumulated lands until 1884, when he began to sell small parcels to Silas Green. Between 1884 and 1905, White sold Green three separate tracts of land, for a total of 26 acres, being the same as modern-day Tract 978. Prior to this time, modern-day Tract 978 was part of the large plantation Port Tobago. The various owners lived in the manor house. Several other occupations were mapped on the property, but none within modern-day Tract 978. Silas Green appears to have been the first occupant, beginning in 1884. Silas Green lived on and improved modern-day Tract 978, and possibly established a family burial plot on the property. Silas Green died some time between 1920 and 1942, but his estate retained ownership at acquisition. The farmstead observed on the 1937 aerial photograph can be attributed to Silas Green and his heirs, spanning from 1884-1942.

Tract 1119-1 (Map Sheet 7, Quad H6)

Occupation History: Inspection of the 1937 aerial photo shows one cluster of buildings in this long, "necktie"-shaped tract in Caroline County. Although the land was initially acquired in 1942, it had to be subdivided from another property in 1943 and the final acquisition was not settled until 1945, when the government acquired the property for $300.00 as Tract 1119-1 [also called Tract 1119A], which encompassed 15 acres. One cluster of buildings was noted within the tract on the aerial photo, all within the southern-most tip of the property surrounded by open/cultivated land to the north.

For the history of Tract 1119-1 from 1650 to 1864, see Tract 978, which has an identical chain of title for that period.

In 1864, the land on which modern-day Tract 1119-1 is located was situated within the late Dr. Edmund P. White's estate. That year, the 1107 4/10-acres were partitioned amongst White's heirs. In that partition, Jonathan B. White drew "Lot No. 1 of hill land-99 1/5 acres." A small structure is situated in the southern-most tip of the property. In the survey calls, the structure is identified as point U, "The Old Summer House." Sources suggest that this property was also known as "Cherry Hill" (Pratt 1997:62). Because it is referred to as "old" on the plat, the structure had obviously been in use for quite some time by 1864. It is unclear who built this summer house or who used it as such, but it does appear to be the first occupation on modern-day Tract 1119-1, and the same structure observed on the 1937 air photos. Evidence suggests that the "Summer House" was built after 1816. That year, current owner, John Waring, insured the property and did not enumerate a summer house in his listing of structures.



Map 95. 1864 plat of the lands of the late Dr. E. P. White showing the area of modern-day Tract 1119-1 and "The Old Summer House" (CRHC file 2004-040-263-010).

The 1864 Gilmer map also depicts this portion of Caroline County. However, the error inherent in historic maps makes it difficult to pinpoint the corresponding location on the Gilmer map. There is a small structure depicted on the Gilmer map that might correspond to "the old summer house," but it is not a positive correlation.

Map 96. 1864 Gilmer map possibly showing the "Old Summer House."

In addition to the parcel of land where modern-day Tract 11119-1 is located, John B. White also inherited "Lot No. 1 of flat land," which included the Port Tobago house, where he lived with his family. The White family might have used the "old summer house" on modern-day Tract 11119-1 seasonally, as the name suggests. Upon John B. White's death, his daughter, Lillian White, inherited the Port Tobago house and its lands, including the location of modern-day Tract 1119-1. Lillian married William M. L. Anderson in 1880, and they lived at Port Tobago until the house burned in 1901 (CRHC file # 2004-040-066-003; Pratt 1997:62). That year, the Lillian White Anderson sold the hill land, also known as "Cherry Hill," the location of the "Old Summer House," and the location of modern-day Tract 1119-1 (Pratt 1997:62).

There is a break in the chain of title following Lillian White Anderson's ownership in 1901 of the land where modern-day Tract 1119-1 is located, until 1922. At that time, the 15 acres that make up modern-day Tract 1119-1 was owned by W. H. Young, who presumably lived in the house formerly known as Cherry Hill/Old Summer House. On December 28 of that year, he sold the 15 acres that is modern-day Tract 1119-1 to William Arthur Young, who apparently continued that occupation (CC DB 115:490).

In 1937, the occupation on modern-day Tract 1119-1 consisted of a single dwelling (the former "old summer house"), a cluster of small outbuildings to the south, and a large kitchen garden or orchard to the east of the house. Open cultivated fields surround the house in all directions.

Map 97. Tract 1119-1 (left), and the William Arthur Young farm in 1937 (right).

In 1940, the Caroline County Road map showed William Arthur Young's farmstead on modern-day Tract 1119-1 as "farm unit, in use."

Map 98. Portion of the 1940 road map of Caroline County showing William Arthur Young's farmstead on modern-day Tract 1119-1 as "farm unit, in use."

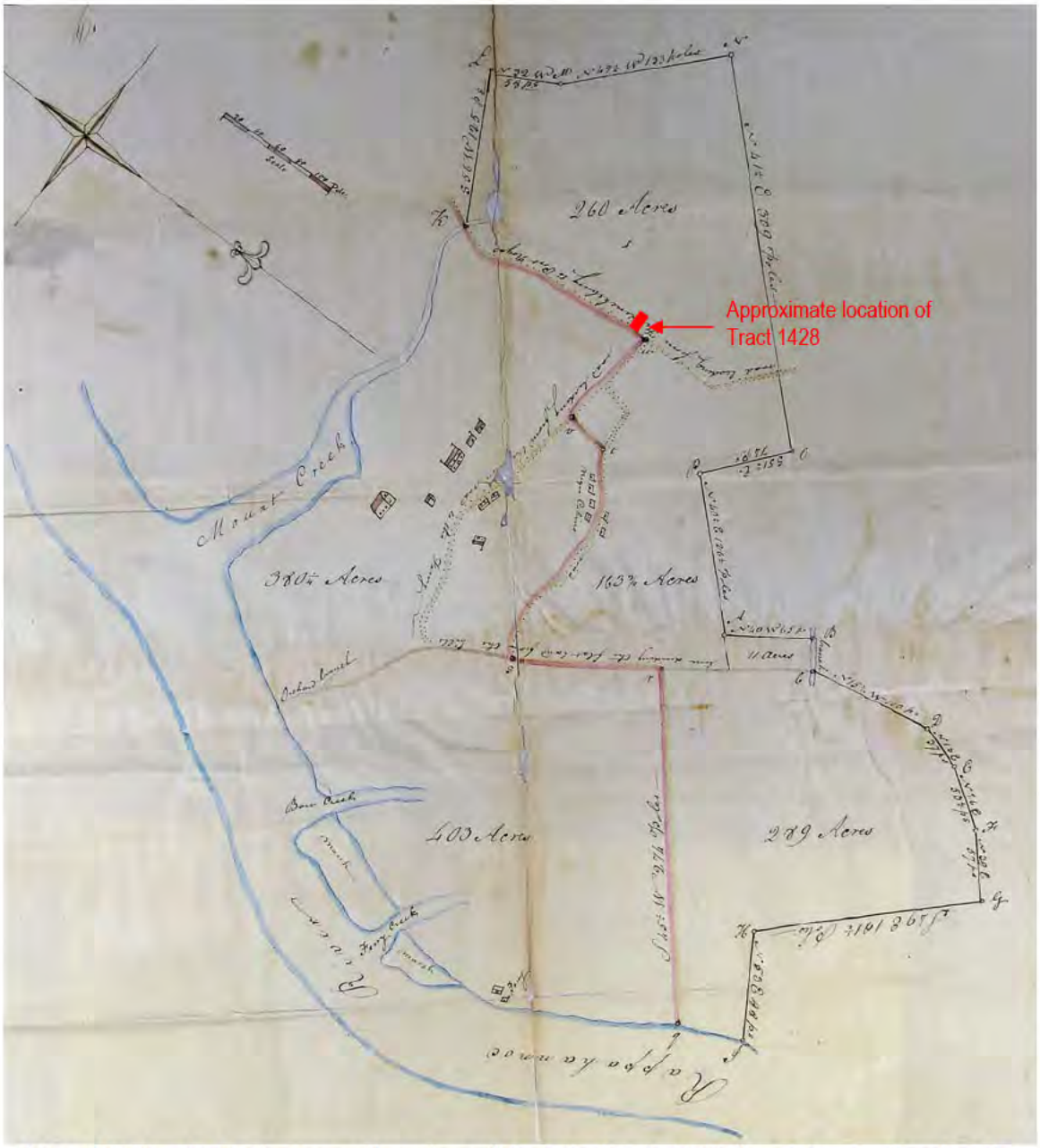
On September 15, 1942, the United States government filed the original petition for condemnation and declaration of taking for modern-day 1119-1. However, by August 24, 1943, "an amendment to the aforesaid declaration of taking was filed, the purpose of which was to subdivide Tract No. 1049," in order to divide out the separately owned lands that made up modern-day Tracts 1119 and 1119-1. Finally, on October 11, 1945, those lands were further sub-divided to separated Tract 1119 and Tract 1119-1, which were separately owned. When acquisition was finally settled, William Arthur Young was compensated $300 for his 15 acres, lands which he had occupied.

Summary: In 1650, Thomas Lunsford received a patent on the land where modern-day Tract 978 is located. Lunsford's daughter, Katherine, inherited the patent in 1653. She married Ralph Wormley, and the Lunsford patent became part of Wormley's vast landholdings on the south shore of the Rappahannock River. Wormley's daughter, Elizabeth, inherited the portion of the Lunsford patent where modern-day Tract 978 is located. She married John Lomax, who built the Port Tobago manor house on the property in 1703. The property stayed in the Lomax family until 1811 and the death of heir Thomas Lomax. In 1815, Port Tobago was sold to John Waring, who in turn sold the property to Dr. Edmund P. White in 1835, who lived at Port Tobago until his death in 1856. In 1864, White's estate was partitioned, and the lot on which modern-day Tract 1119-1 is located as well as the Port Tobago mansion was drawn by Jonathan B. White who lived there with his family. At the time of that partition, a habitation called "the old summer house" was located on modern-day Tract 1119-1. The house was most likely built after 1816 either by Waring or by Dr. White. These lands were also known as "Cherry Hill," and as the plat suggests, was used as a summer home. When Jonathan B. White died, his daughter Lillian White inherited his lands. She and her husband, William M. L. Anderson, lived in the Port Tobago house until it burned down in 1901. During that time, the Andersons might have continued to use the "old summer house" on modern-day Tract 1119-1. Between 1901 and 1922, there is a break in the chain of title. In 1922, W. H. Young owned modern-day Tract 1119-1, where he lived in the "old summer house" and farmed. That year, he sold the 15 acres that made up modern-day Tract 1119-1 to William Arthur Young who also lived in the "old summer house" and farmed until government acquisition in 1942, although acquisition was not settled until 1945. The house observed on the 1937 aerial photograph was built post-1816 and was used as a summer home called Cherry Hill until 1901. From at least 1922 until acquisition, the house was occupied full time and modern-day Tract 1119-1 was farmed by W. H. Young followed by William Arthur Young.

Tract 1428 (Map Sheet 2, Quad K8)

Occupation History: Inspection of the 1937 aerial photo shows a structure on this tract in Caroline County. In 1943, when the government acquired the property, the structure was situated in the center of Tract 1428, which encompassed one acre. This single structure housed Mt. Dew Baptist Church.

The history of Mt. Dew Baptist Church on modern-day Tract 1428 has contradictory aspects to it, and data in general is scanty. Current research associated with this project indicates that the history of modern-day Tract 1428 from *ca*. 1800 to at least 1869 is identical to the history of Tract 1. That property was part of the Linden estate held by the Gouldin family. According to current research, by 1869, modern-day Tract 1428 was owned by the Gouldin family and was included in the property that was within a 260-acre tract previously in the possession of Theodore Garnett, as specified in the will of John Gouldin (see Tract 1).



Map 99. The 1832 plat map of portion of the Charles C. Taliaferro Estate, showing the 260 acre tract along with other lands allotted to Theodore Garnett, which includes the location of modern-day Tract 1428 (Garnett vs. Taliaferro 1839).

However, secondary source Wingfield (1924:169) offered a different history of the property. According to his account, "Mt. Dew Baptist Church was organized in 1869 by Rev. Elmore Taylor, Rev. Burwell Toler and Rev. Spencer Kay. The latter became the first pastor. The church was first named Moss Neck Church, from the location and later named Mt. Dew for Captain Dew, who gave an acre of land to the congregation." Historian Marshall Wingfield authored his history of Caroline County at a time when Mt. Dew Baptist Church was still an active congregation, which implies a more intimate and accurate knowledge of the information which he presented. However, his source is not

cited, which begs the question if the origin story he presented was based on primary research or oral history. Without a doubt, the Dew family property called Windsor (Tract 50) is in the immediate vicinity of Mt. Dew Baptist Church and it is entirely possible that the Dew family assisted in the establishment of the church. Based on the church's name being homage to the Dew family, some connection obviously existed.

Contrary to Wingfield's version of the origin of the land on which modern-day Tract 1428 is situated, current research clearly indicates that on December 21, 1895 William Wallace and others conveyed one acre of land, the same as modern-day Tract 1428 to John W. Pendleton on behalf of the Trustees of Mount Dew Baptist Church (CC DB 68:439). It is possible that previous incarnations of the church met elsewhere or those arrangements were made on an informal basis. Wingfield (1924:169) reported in 1924 that the membership of Mt. Dew Baptist Church was 169, and the property valuation was $2,000.

But perhaps more important than the legalities of land transactions, was the role that Mt. Dew Baptist Church played in the close knit African-American community in the Moss Neck area. A number of informants had memories of the church from the 1930s. Informant Lois Garnett (2007) pointed out, "Our church was in the Mt. Dew area…Mt. Dew Elementary [was] about a quarter of a mile [from home]. It was next door to the church." The Bumbrey family lived close (see Tract 1), to Mt. Dew Baptist which they attended. Informant Cora Lee Bumbrey Greene (2007) recalled:

> They would have all-day meeting, picnic, you bring your food and you serve the food outside, you know, just everybody in the church or the community come. They go sit and eat outside. Each family would bring boxes of food, and everybody would come, and they would sit out and eat or stay in the church, either one…Yeah. They church that they took, and after they took the church, I can't remember anybody going to church because they had to go—Daddy had to go a ways somewhere to find a church. Because the church that they took, the government took, that was the only church for the black families.

Bumbrey siblings George Bumbrey and Alberta Bumbrey Henderson (2007) shared their recollections of Mt. Dew Baptist Church:

Mr. Bumbrey: Yeah, I can tell you about Mt. Dew. I remember that. We used to go to school. The Mt. Dew church and school sat close together. I know about that.

Mrs. Henderson: And Mama'd make us go to Sunday school, walk.

Mr. Bumbrey: And they took the cemetery, wouldn't let nobody else bury nobody down there at our cemetery. Put a fence around it.

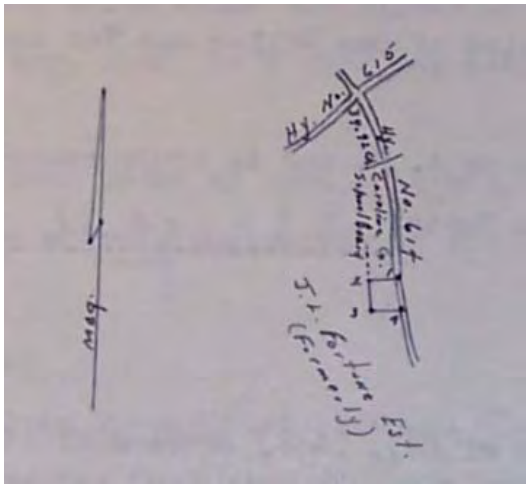
Mrs. Henderson: [There were revivals] And have a whole week of it, and you have to carry dinner every day. Mama used to have an old trunk, she had to cook all that stuff and

take it to the church in the wagon…Pie and cakes and corn pudding and all that stuff.

Mr. Bumbrey: One of them old hams from killed hogs. Take one of them hams and cook it.

Mrs. Henderson: They don't have it now, you know, all day, but them minister back then, they had it all day long, five days a week.

Despite the discrepancies in the legal record, from the late nineteenth century through acquisition, Mt. Dew Baptist Church was an important part of African-American community life in the Moss Neck area until 1943. On April 27th of that year, the United States government acquired the 1-acre parcel that was modern-day Tract 1428 in condemnation in District Court Case No. 1699. At that time, the trustee of Mount Dew Baptist Church were L. L. Davis, Isiah Chambers (see Tract 52), John Lewis, Thomas Woodfolk and J. D. Wallace (CC DB 120:47-49).



Map 100. Tract 1428 in 1943, location of Mt. Dew Baptist Church (CC DB 120:49).

Summary: Modern-day Tract 1428 was the location of Mt. Dew Baptist Church, which was originally called Moss Neck Colored Church. Current research indicates that from *ca*. 1800 to 1895, modern-day Tract 1428 shared the same land history with Tract 1. However, secondary sources suggest Mt. Dew Baptist Church was founded in 1869 on land donated by the Dew family, hence the name of the establishment. Additional research would be required to resolve this discrepancy, if possible. Despite that, Mt. Dew Baptist Church was a central part of the African-American community from the mid to late nineteenth century through to the property's acquisition by the United States government in 1943. The church, situated next door to Mt. Dew school, provided church services, Sunday School and week-long revivals.

PROJECT SUMMARY

The intent of this project was to begin the process of providing a full historic context for lands within the Fort A. P. Hill boundary. Because of the scale of the 76,000+ acre facility, this document represents the beginning steps in the context-building process and is by no means comprehensive. This document contains land histories that are specific to the tracts as they were acquired by the United States government in 1941 and 1942. The histories are not simple chains of title. Instead, they are full land histories based on primary research, and are as inclusive in scope as possible. The histories discuss not only land ownership, but land use and occupation. In each case, every effort was made to determine the date, location and identity of initial occupation. Some tracts contain multiple, simultaneous occupations. Many of those occupations were by landowners, but tenants, sharecroppers and extended family members were also represented in the documented occupations. Some tracts saw occupation at a single location or farm, occupied by a series of occupants over time. Often, farms were kept in families generation after generation. At other times, farms were simply sold on and new families began their own legacy of occupation. Tracts for which there was no evidence of occupation on the 1937 aerial photographs were excluded from consideration in the project. A total of 287 tracts were identified as not occupied.

In conducting land history in Caroline County, it became abundantly obvious that deed records were only a starting point. Being a burned county, many of Caroline's antebellum deeds and public records have been lost. As an alternate and substitute to deed records, an understanding of family genealogies through birth, death, and marriage records along with census records, chancery court records, wills, depositions and other records allowed for a more complete understanding of the land history in question, and the people who occupied it.

A total of 31 histories are included in this document, which represent 37 occupations. The specific tracts and occupations are listed in the Table of Contents. An attempt was made to be as inclusive as possible about the types of properties researched and written up in this document. The histories span a wide spectrum including large named farms, tenant farmers, sharecroppers, white families, black families, schools, churches, owner-occupations, renters, taverns and stores. In short, these histories represent a cross-section of the types of properties present within FAPH lands. The remainder of the tracts not discussed in this document are those on which context research should continue in subsequent projects. Combining the tracts that have been identified as unoccupied with those for which complete land histories have been written, a total of 318 tracts have associated data that will be immensely useful for management of cultural resources at Fort A. P. Hill.

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1850 Madison County, Virginia

1850 Sumpter County, Alabama
1860 Caroline County, Virginia
1870 Caroline County, Virginia
1880 Caroline County, Virginia
1900 Caroline County, Virginia
1900 Florence Township, Burlington County, New Jersey
1910 Caroline County, Virginia
1910 Florence Township, Burlington County, New Jersey
1920 Caroline County, Virginia
1920 Florence Township, Burlington County, New Jersey
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1930 Fredericksburg, Virginia
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APPENDIX A:
Plat data

Name		Sheet	Tract	Acres	Cost	PUR/CON	Notes
Skinker, W. E.,	et al	2 J7	**1**	687	$28,709.87	P	In text
Kay, Laura (Charlie T.)	et al	2 G9	**2**	107.2	$3,250.00	C	
Skinker, William E	et ux	2 H9	**3**	27.69	$500.00	P	
Powers, Ruth R		2 J8	**4**	28	$250.00	P	no occupation
Kay, Luther T. Jr.	et ux	3 K8	**5**	124	$1,650.00	P	no occupation
Caroline Co. Sch Board,Turstees	Mica	1 G10	**6**	7.2	$19,563.00	P	
Caroline Co. Sch Board,Turstees	Upper Zion	6 B4	**7**	2	$2,870.00	P	
Owens, Mary Alma	et al	2 J8	**8**	36	$325.00	C	no occupation
Woodfork, Rosa Lee	et vir	2	**9**	34	$1,000.00	P	
Powers, Ruth R	adm rx	2 H9	**11**	43.4	$500.00	P	
Sweet Potato Assoc. Inc		3 E6	**12**	17	$22,280.00	P	
Caroline Co. Sch Board,Turstees		1 D9	**13**	1.5	$2,057.00	P	
Caroline Co. Sch Board,Turstees	Baylortown	3 E6	**14**	2	$1,281.00	P	
Caroline Co. Sch Board,Turstees	Delos	4 A9	**15**	2	$2,165.00	P	
Garnett, Lucy	et vir	3 E6	**16**	17.3	$425.00	P	
Caroline Co. Sch Board,Turstees	Bethleham	2 B9	**17**	2.5	$646.00	P	
Caroline Co. Sch Board,Turstees		6 E3	**18**	1	$1,882.00	P	In text
Caroline Co. Sch Board,Turstees	Mt Olive	4 F3	**19**	1	$866.00	P	
Hicks, Wirt T.	et ux	4 G1	**20**	236	$5,350.00	P	
Hicks, Wirt T.	et ux	4 G1	**20**	236	$5,350.00	P	
Broaddus, Gouldin L.	et al	2 G7	**21**	120	$1,000.00	C	
Durrett, Ashton & Hazel B.	et ux	1 H2	**22**	72.4	$3,500.00	P	
Kay, Tie		2 F9	**23**	31	$556.00	C	In text
Christian, Richard A	et ux	2 F9	**24**	18	$500.00	C	
Durrett, Robert	et ux	2 C5	**25**	151.2	$2,900.00	P	
Hefflen, J. M.	et ux	2 A3	**27**	221	$6,500.00	P	
Hefflen, J. M.	et ux	2 A3	**27**	221	$6,500.00	P	
Smith, William and Mary		1 J10	**28**	16.8	$840.00	C	
Kay, Bessie May		1 G10	**29**	42.6	$1,400.00	P	
Johnson, Eliza		2 F9	**30**	11	$200.00	C	
Jackson, Jinnie Note 6	est	2 D5	**31**	43	$595.00	C	no occupation
Lomax, John Note 7	est	2 D5	**31**	43	$595.00	C	
Holloway, J. T.	et al	2 H7	**32**	8	$100.00	C	no occupation
Holloway, J. T.	et al	2 H7	**32**	8	$100.00	C	
Holloway, John T.	et ux	2 H7	**33**	54	$5,900.00	P	In text
Holloway, John T.	et ux	2 H7	**33**	54	$5,900.00	P	
Caroline Co. Sch Board,Turstees	Naulakla	6 G6	**34**	0.5	$1,020.00	P	
Eppo, Emma		2 J6	**35**	18	$275.00	C	
Gray, Allen & Eppe Note 3	est	2 J6	**35**	18	$275.00	C	
Cole, Robert	et ux	2 J6	**36**	14	$950.00	P	In text
Skinker, Lucy M	et al	2 J5	**37**	13	$480.00	C	no occupation

Woolfolk, William		2 E8	**38**	24	$312.00	C	
Jackson, Washington		2 F8	**39**	25	$330.00	P	
Kay, Phil Sr		2 H9	**40**	44.76	$675.00	C	
Bowie, Frank Eugene	et ux	2 A10	**41**	73	$950.00	P	no occupation
Powers, Charles P.		2 F9	**42**	12	$125.00	C	no occupation
Powers, Ruth R	adm rx	2 H9	**43**	35	$400.00	P	no occupation
Holms, Linsey		2 F8	**44**	28	$216.50	C	
Holms, Linsey		2 F8	**44**	28	$216.50	C	
Kay, Mimie S. (Lucy)	et vir	2 H10	**45**	16	$300.00	P	
Lomax, William		2 D6	**46**	8.8	$70.00	C	no occupation
St. Paul's Colored Ch. Trustees B		4 A9	**47**	1.6	$2,300.00	C	
Baylor, Winnie	est	2 D6	**48**	22.80	$160.00	C	
Baylor, John R	est	1 G8	**49**	51.20	$300.00	C	
Waller, Kate D. (Dow-Dew, T. W.)	et al	2 G5	**50**	1015	$18,500.00	P	
Garnett, Lucy (Smith)	et vir	3 F6	**51**	3	$715.00	P	
Chambers, Isaiah	et ux	2 J6	**52**	15	$900.00	P	In text
Andrews, Edwin M	et ux	6 D8	**53**	98.00	$5,000.00	P	
Banks, William		2 E6	**54**	39.25	$380.00	C	
Harrison, Washington	est	2 J5	**55**	34.5	$625.00	C	
Harrison, Washington	est	2 J5	**55**	34.5	$625.00	C	
Baker, Lucy	est	2 F6	**56**	24.00	$250.00	C	
Baker, Harry (Henry)		2 F6	**57**	23.00	$220.00	C	
Baylor, Philip		2 B4	**58**	68.00	$920.00	C	
Baylor, Phillip		2 A4	**59**	2.20	$30.00	C	no occupation
Lee, Louisa		2 E7	**60**	30	$495.00	C	no occupation
Toombs, Edmonia P		2 F7	**61**	156	$2,750.00	P	In text
Toombs, Edward w.	et ux	2 E7	**62**	25.2	$475.00	P	no occupation
Gouldin, J. H	et ux	2 G10	**63**	259	$6,000.00	P	
Samuels, Rebecca M.	et al	2 C4	**64**	97	$3,300.00	P	
Acors, Russell G.	et ux	3 F6	**65**	101.40	$12,000.00	P	
Brown, W. B.		2 B2	**66**	82	$1,455.00	P	no occupation
Dillard, Lizzie G		1 K2	**67**	260	$9,500.00	P	
Eubank, Robert	et ux	2 A1	**68**	60	$1,850.00	P	
Porter, Sarah		2 B2	**69**	5.6	$165.00	C	
Gouldin, J. William (Ruth R. Powers)	et al	6 F6	**70**	54.5	$800.00	P	no occupation
Gordon, Alice		2 B3	**71**	108	$1,319.00	C	
Holloway, Frances, G		2 H7	**72**	58	$500.00	P	no occupation
Brown, Warner B.	et al	2 E3	**73**	103.6	$1,335.00	C	
Johnson, Helen		2 E6	**75**	210	$1,700.00	P	
Gouldin, Nannie	et al	2 G8	**76**	400	$5,850.00	P	
Newton, French		2 B5	**77**	21.2	$425.00	C	
Lucas, Willie	et ux	2 B5	**78**	19.7	$600.00	P	
Jones, Eugene B.	est	2 G9	**79**	17.4	$2,168.00	C	no occupation
Colbert, Chartine	et ux	2 B6	**80**	90.4	$500.00	P	no occupation
Powers, Ruth R	adm rx	1	**81**	122	$1,250.00	P	no occupation

Powers, Ruth R	adm rx etal	2 D6	**83**	106.8	$2,000.00	C	
Land Abstract & Title Co		2 J8	**84**	34	$431.04	C	no occupation
Baylor, John W	et ux	3 E6	**85**	33.20	$500.00	P	no occupation
Bullock, Grace & Andrew	et al	2 A8	**86**	87.6	$1,850.00	p	
Street, John A.		1 J5	**87**	5.2	$155.00	P	
Taylor, Frank W.	et ux	2 B4	**89**	2.4	$300.00	P	
Baylor, William		2 A4	**91**	2.2	$50.00	C	
Johnson, Eddie W.	et al	7 G6	**92**	10	$100.00	C	no occupation
Gray, Oliver C.		2 A2	**93**	14.8	$90.00	C	
Jones, Richard T	et ux	6 A5	**94**	56.3	$1,100.00	P	no occupation
Bullock, Ida L		2 B11	**95**	362.8	$10,500.00	P	
Lee, Malinda		3 D5	**97**	5	$75.00	P	no occupation
Fed Land Bk of Baltimore		1 C10	**98**	1100	$3,500.00	C	
Bullock, Robert A.	et ux	2 A8	**99**	50	$475.00	P	no occupation
Bullock, Robert A.	et ux	2 A10	**100**	129	$2,600.00	P	In text
Bullock, Edwin L. (Collis E.)	et al	2 b9	**101**	210.5	$2,000.00	p	no occupation
Flood, Allen		1 J10	**102**	43.6	$650.00	C	
Evans Ada M. (Lyons, Ada M.)	est	2 B6	**103**	189.5	$7,500.00	P	no occupation
Holloway, James H.	et ux	2 B2	**104**	104	$3,000.00	C	
Holloway, James H.	et ux	2 B2	**104**	104	$3,000.00	C	
Brown, Henry		1 J9	**105**	36.5	$1,452.00	C	
Greenstreet, Cora L.	et al	2 C8	**107**	248.8	$5,450.00	P	
Bethlehem Church (Board pf Trustees)		2 A9	**106**	3	$3,850.00	C	In text
Ferguson, John	et ux 2	2 E6	**108**	18.8	$730.00	P	
Brown, Andrew Moore		2 C3	**109**	77.6	$900.00	C	no occupation
Thomas, Charles M(The Lodge)	et ux	1 J10	**110**	621	$60,429.00	P	In text
Waite, W. P.		1 K3	**111**	41	$200.00	C	no occupation
Powers, Ruth R	adm rx	2 G10	**112**	4	$500.00	P	
Clark, William		2 A5	**113**	22.4	$300.00	C	
Flippo, James B	et ux	1 G3	**114**	224	$1,100.00	P	
Powers, Ruth R	adm rx	1 H5	**115**	20	$315.00	P	no occupation
Powers, Ruth R	adm rx	3 F5	**116**	55.2	$2,100.00	P	
Ferguson, Joseph	est	1 G5	**117**	27.2	$170.00	C	no occupation
Kocsis, Leslie	et ux	2 A7	**118**	213.11	$10,000.00	P	
Jones, Sallie B		1 J2	**119**	72.2	$2,861.00	P	
Smith, Nelson	et ux	1 J6	**121**	22.8	$250.00	P	no occupation
Skinker, Robert E.		1 H2	**122**	22	$130.00	C	no occupation
Smith, Henry	et al	1 J5	**123**	34	$1,250.00	C	
Smith, Nelson	et ux	1 J9	**125**	11.3	$1,200.00	P	
Gordon, Jesse		1 J1	**126**	21	$290.00	C	no occupation
Gordon, John	et ux	1 H1	**127**	23.4	$2,575.00	P	
Gordon, Innes		1 J2	**128**	22.2	$300.00	C	no occupation
Taylor, James Edward		1 J4	**129**	5	$315.00	P	
Puller, Robert H	et al	1 J8	**130**	168	$7,500.00	P	
Pendleton, E. B.	est	1 J4	**131**	14.4	$1,325.00	C	

Tate, Robert H. & Sarah	et al	1 J4	**132**	10.2	$180.90	P	
Street, Patsie		1 J4	**133**	10.4	$120.00	C	
Robertsson, Julia		1 J4	**134**	10.1	$120.00	C	
Taylor, Nancy		1 J4	**135**	10	$120.00	C	no occupation
Taliaferro, Melinda		2 D8	**136**	43.2	$249.60	C	
Young, Edgar M		1 K5	**137**	408	$1,680.00	C	
Stefaniga, Joseph J.	et ux	1 G6	**138**	65.5	$4,700.00	P	
Druiett, Ann Stefaniga		1 F7	**139**	35	$700.00	P	no occupation
Ellis, Victoria Frye & Tom A	et al	1 A7	**140**	4.8	$225.00	P	
Minor, John L.	et ux	1 J5	**141**	2.4	$750.00	P	
Ellis, Eugene B.	et al	1 G7	**142**	90.4	$750.00	C	
Brooks, Jennifer	et ux	3 G3	**143**	230.3	$7,250.00	P	
Howard, Arthur L.	et ux	1 G8	**144**	11.2	$1,300.00	P	
Howard, Arthur L.	et ux	1 G8	**144**	11.2	$1,300.00	P	
Smith, Belle B	et al	1 G2	**145**	32.3	$1,000.00	C	
Hicks, Mary E (C. F.)	et ux	4 F2	**146**	156.5	$3,500.00	P	
Hicks, Mary E (C. F.)	et ux	4 F2	**146**	156.5	$3,500.00	P	
Gracik, Joseph	et ux	1 G6	**147**	136	$5,350.00	P	
Skinker, Mrs. Ben M	et al	2 E6	**148**	77	$770.00	C	
Thomas, Judson C. & E. P.		4 E4	**149**	41.3	$525.00	C	
Baylor, Mary A	et al	3 H7	**150**	68.40	$1,200.00	C	
Henshaw, T. Scott	et ux	4 G2	**151**	152.4	$6,000.00	P	
Henshaw, T. Scott	et ux	4 G2	**151**	152.4	$6,000.00	P	
Morris, Dal	est	1 F4	**152**	0.8	$100.00	C	
Evans, Ada M (Geo P Lyon)	est	2 D9	**153**	393.6	$8,500.00	P	
Travis, Edith M. & Edith M.	et vir	4 B1	**154**	29.2	$550.00	P	
Travis, John R & E. B.& R. C.	et al	2 A11	**155**	263	$7,500.00	P	In text
Travis, John R	et al	4 H2	**156**	91.8	$13,250.00	P	
Wright, Walter Boyd	et ux	1 G10	**157**	128.8	$6,500.00	P	
Taylor, Onan E.	et ux	4 A2	**158**	22.8	$800.00	P	
Taylor, Haley H	et ux	1 G10	**159**	4.4	$2,750.00	P	
Baylor, Eugene	et ux	3 F5	**160**	11.60	$225.00	P	no occupation
Motley, John L		2 G11	**161**	72.2	$8,000.00	P	
Collins, Alfred R.	et ux	6 C9	**162**	30	$850.00	P	no occupation
Carter, Richard C.	et ux	7 E6	**163**	309	$6,300.00	P	In text
Shaddock, Frederick C.	et al	6 G1	**164**	783.2	$15,000.00	C	
Washington, William & Buckner		2 F11	**165**	6.4	$96.00	C	no occupation
Vaughan, William H.	et al	2 D10	**166**	174.8	$3,850.00	P	
Coleman, Nellie		2 G11	**167**	4,4	$55.00	C	no occupation
Turner, Eddie & Annie		4 A1	**168**	74.9	$1,800.00	C	
Raines, R. Isacc	et ux	2 C6	**169**	281.2	$7,250.00	P	
Eager, J. Curtis	et ux	5 C5	**170**	137	$3,000.00	P	
Taylor, William A	et al	1 E9	**171**	77	$3,000.00	C	
Skinker, William E	et ux	2 C10	**172**	156.2	$2,500.00	P	
Grymes, Fayett		2 F11	**173**	18.6	$277.50	C	
Goodloe, Spencer		2 G10	**174**	15.2	$355.00	C	
Eager, Nettie M		5 C5	**175**	266.5	$8,500.00	P	

Fortune, Richard (B.)		5 D4	**176**	133.8	$6,000.00	P	
Clarke, Mary		4 A3	**177**	60.6	$100.00	P	
Waugh, Susan	est	1 F10	**178**	16.4	$330.00	P	
Keyser, Susie M	et vir	4 C1	**179**	117	$2,800.00	P	
Travis, John R. & Bowie, F. E.	et al	4 C1	**180**	23.2	$900.00	P	
Travis, John R. & Bowie, F. E.	et al	4 E1	**181**	13.2	$250.00	P	
Brown, William H.	et ux	1 G9	**182**	24	$6,000.00	P	
Robb, Ernest S.	et ux	4 C5	**183**	141.4	$4,500.00	P	In text
Pugh, Kate W.	est	1 E9	**184**	80	$4,000.00	C	
Ferguson, Emma Street	et vir	1 J4	**185**	16.5	$1,475.00	P	
Thomas, Mrs. R. J.		1 G10	**186**	6.5	$950.00	C	
Rich, Charles	est	4 J5	**187**	79	$800.00	C	
Sale, Silas J	et ux	2 B4	**188**	2.4	$50.00	C	
Denson, F. W. (Marice E.)	est	2 G3	**189**	114.8	$2,025.00	C	
Jones, Herbert	et ux	2 G9	**190**	10.1	$425.00	P	In text
Martian, John Mathew	et al	1 H10	**191**	113.7	$3,000.00	C	
Hill, William	et ux	1 E5	**193**	14.4	$1,600.00	P	
Hill, William	et ux	1 E5	**193**	14.4	$1,600.00	P	
Treblik, Stefan	et al	1 E7	**195**	133.5	$4,750.00	C	
Scott, Mollie	et vir	1 J9	**196**	17	$275.00	P	
Collawn, Robert W		3 H2	**197**	47.2	$5,500.00	P	
Collawn, Robert W	et al	3 H1	**198**	54	$1,200.00	P	no occupation
Collawn, Mary V		3 H2	**199**	56	$4,800.00	P	
Bullock, John L.	et ux	1 J9	**200**	20.8	$3,300.00	P	no occupation
Sale, Silas J	et ux	1 H2	**201**	102	$1,250.00	P	
Liberty Baptist Church w		1 H10	**202**	5.5	$8,100.00	C	
Sale, Silas J	et ux	2 E8	**203**	356	$3,300.00	P	In text
Buckner, Richard C.		1 G11	**205**	94.8	$5,500.00	P	
Buckner, Richard C.		4 D5	**206**	106.5	$2,100.00	P	
Crosby, Travis		3 K1	**207**	4.4	$520.00	C	
Kay, Thomas G.		3 H4	**208**	429	$10,000.00	P	
Keyser, Susie M	et vir	3 K1	**209**	48.8	$1,300.00	P	
Thomas, Allie G.	et ux	1 E6	**210**	74.1	$3,600.00	P	
Kay, Thomas G.		1 H9	**211**	39.6	$1,100.00	P	
Kay, Thomas G.		3 J7	**212**	56.4	$400.00	P	no occupation
Clark, B. Rudolph		4 B3	**213**	65.9	$1,500.00	C	
Marshall, James G.		3 H1	**214**	105.8	$2,875.00	P	
Turner, Emma June		1 F7	**215**	12	$180.00	P	
Smith, Lillian		2 C7	**216**	23.2	$162.40	C	
Smith, M. Ella		2 B7	**217**	5.4	$81.00	C	
Jackson, Matilda	est	2 C7	**218**	10	$80.00	P	
Mudd, Louisa	est	2 C7	**219**	22.4	$150.00	C	
Sydnor, Milinda (Mudd, Louisa)?	est	2 C7	**219**	22.4	$150.00	P	
Jackson, James Ruben	est	2 C7	**220**	106.4	$680.00	C	
Broaddus, Gouldin L.	et ux	2 E10	**221**	422.4	$17,250.00	P	In text
Scot, Eugene	et al	1 F7	**222**	30	$675.00	C	

Pollard, Walter (Mollie)	et ux	2 D9	**223**	6.8	$200.00	P	
Purks, Fannie A		2 B1	**224**	13.5	$100.00	P	no occupation
Coleman, Catherine	et al	2 B7	**225**	82	$950.00	C	
Robinson, Roy		2 D5	**226**	48.8	$950.00	P	
Rowe, Alvin	et ux	2 D7	**227**	146.4	$2,300.00	P	no occupation
Wright, Robert	et ux	2 A8	**228**	190.4	$3,000.00	P	
Brown, William	est	4 E1	**229**	14.8	$300.00	C	
Smith, D. C.		2 D11	**231**	44.1	$600.00	C	
Klock, Frances Sale		1 E4	**232**	12.5	$740.00	C	no occupation
Holmes, Edward	est	4 D3	**233**	1.2	$30.00	C	In text
Holmes, Edward	est	4 D3	**233**	1.2	$30.00	C	
Jackson, Maria	est	2 G11	**234**	8.8	$60.00	C	no occupation
Jackson, William S	est	2 B5	**236**	41.2	$640.00	C	no occupation
Ferguson, Mattie G		1 F10	**237**	31.2	$1,600.00	P	
Dobbins, Richard		4 C2	**238**	144.5	$1,650.00	C	
Dobbins, Richard & Alex		4 C2	**239**	20.8	$160.00	C	In text
Jones, Richard T	et ux	3 E8	**240**	102.3	$8,600.00	P	
Stovall, Annie		2 F11	**241**	6	$75.00	C	no occupation
Hill, Aubrey	et ux	1 E5	**244**	1.1	$75.00	P	
Hill, Aubrey	et ux	1 E5	**244**	1.1	$75.00	P	
Harris, Maude		2 D10	**245**	46	$470.00	P	
Harris, Maude		2 D10	**246**	43.6	$500.00	P	
Turner, Eddie & Annie	est et al	4	**248**	41.3	$950.00	C	
Morton, W. H.	est	1 K4	**249**	22	$410.00	C	no occupation
Sheppard, Charles	et ux	6 E5	**250**	50	$600.00	C	
King, Laura Lomax	et al	1 F10	**251**	12.4	$175.00	C	no occupation
Holmes, Laura	est	4 D3	**252**	35.5	$360.00	C	In text
Holmes, Laura	est	4 D3	**252**	35.5	$360.00	C	
Gordon, Inness & Jesse(note 1)		1 J1	**253**	1	$165.00	C	
Innes, John & Jesse GordonNote5		1 J1	**253**	1	$165.00	C	
Street, Robert	est	1 J5	**254**	12	$425.00	C	
Lomax, Albert		2 C6	**255**	8.4	$70.00	C	no occupation
Johnson, Julia	est	1 J6	**256**	3	$30.00	P	no occupation
Rudd, Arthur	et ux	1 J5	**257**	25.4	$600.00	C	
Powers, Ruth R	adm rx	2 C6	**258**	8.8	$8,500.00	P	no occupation
Jones, William	est	1 K8	**259**	70.6	$550.00	C	
Seal, Rachel Richardson	et al	1 F8	**261**	12.3	$250.00	C	no occupation
Union Bk & Trust Co. Inc		4 B11	**262**	59.2	$3,500.00	P	
Bruce, Percy E.	et ux	3 E9	**263**	98	$9,000.00	P	
Jones, Robert (Nancy E.)	et ux	1 K9	**264**	6	$1,200.00	P	no occupation
Lucas, Frances	et vir	2 C6	**265**	10.4	$78.00	P	no occupation
Jackson, Hiter		1 J4	**266**	26.8	$185.00	C	
Vaughan, William H.	et ux	1 K8	**267**	91.6	$1,900.00	P	no occupation
Vaughan, William H.	et ux	1 H8	**268**	242.4	$12,000.00	P	
Edwards, William B	et ux	1 K6	**269**	13.3	$50.00	P	no occupation
Broaddus, Gouldin L.	et ux	2 G10	**270**	0.3	$25.00	P	no occupation

Vaughan, Elizabeth J	et al	6 J2	**271**	10	$427.50	C	
Mathews, Frank	et ux	2 G11	**273**	6.8	$75.00	C	no occupation
Minor, Albert		4 H1	**274**	9.6	$548.00	C	
Powers, Charles P.		2 C6	**276**	12.4	$100.00	C	no occupation
Stevens, C. C.		2 G11	**277**	2	$30.00	C	no occupation
Skinker, James M	et ux	1 F4	**278**	25	$750.00	P	no occupation
Farish, Joseph T	et al	4 H1	**279**	1.6	$20.00	P	
Coleman, Robert	et ux	2 B6	**280**	57	$400.00	C	no occupation
Washinton, Matilda	et ux	2 G11	**281**	1.6	$180.00	C	
Lomax, George	est	1 G7	**282**	33.2	$200.00	C	
Campbell, Elliott, Jr	et al	4 E2	**283**	328.8	$14,500.00	P	In text
Jackson, Martha	est	1 G7	**284**	19.2	$125.00	C	
Brown, Martha	et al	1 G7	**285**	16.2	$300.00	C	
Zoar Baptist Church Trustees w		4 H5	**286**	1	$2,700.00	C	
Mt. Olive Baptist Ch.Trustees B		4 F3	**288**	2.3	$2,300.00	C	
Danridge, McKensey & Wife		2 A5	**289**	2.5	$255.00	C	
Hailstock, J. Tally		2 A4	**290**	22	$100.00	C	
Owens, Mary Jane	et vir	2 K8	**291**	14	$600.00	P	In text
Danridge, McKensey	est	2 A5	**292**	5	$70.00	C	no occupation
Reynolds, John A.	est	1 F7	**293**	54	$1,650.00	P	
Jordan, Amy L.		1 G7	**294**	10	$100.00	C	
Bullock, Annie L		1 J9	**295**	59.8	$3,225.00	P	
Carneal, R. W.	et ux	4 H4	**295**	90	$3,250.00	P	
Brown, Ardell	et vir	1 J8	**296**	4	$75.00	P	
Bullock, Annie L		1	**297**	59.8	$3,225.00	P	
Thomas, Willie B.	et ux	1 D7	**298**	4.3	$125.00	P	no occupation
Norman, John W.	et ux	1 D10	**299**	36	$1,400.00	P	
Jones, William E (Emmittee C)	et al	3 G1	**301**	86.4	$1,700.00	P	
Norman, Samuel		1 J9	**302**	16.8	$400.00	P	
Winston, James & Anthony		1 H6	**303**	33	$300.00	C	
Baylor, John W & Annie L	et ux	3 F5	**304**	10.80	$1,150.00	P	
Allport, Mary C	est	5 F5	**305**	14.50	$200.00	C	
Holloway, J. M.		4 G2	**306**	56	$650.00	C	
Holloway, J. M.		4 G2	**306**	56	$650.00	C	
Jackson, Killis S	et ux	4 C2	**307**	86.8	$1,500.00	P	
Bruce, Homer H.	et ux	5 D1	**308**	163	$5,600.00	P	
Reeves, William B.		4 H2	**309**	22	$1,850.00	P	
Robb, James E.	est	4 F2	**311**	50.4	$725.00	C	
Armistead, Harry H & Estelle	et ux	6 A6	**312**	30.00	$1,500.00	P	
Robb, Irene & Naomi(O. Rich)	et al	4 E3	**313**	95.6	$1,200.00	C	
Farmer, Floyd	et ux	6 F9	**316**	89	$3,100.00	P	
Satterwhite, Cyrus	et al	4 H2	**317**	28	$825.00	C	
Coleman, Harry		4 D2	**318**	14.5	$100.00	C	In text
Shackfeford, Lissie J	et vir	3 G3	**319**	92.2	$7,500.00	P	
Powers, William T.(Hicks, R.A.)	et ux	4 F1	**320**	128.5	$2,800.00	P	
Evans Ada M. (George P.)	est	1 H7	**321**	468.8	$6,000.00	P	

Jackson, William S	est el al	1 A9	**322**	38.3	$375.00	C	no occupation
Harris, Maude E		4 C3	**323**	366.8	$8,000.00	P	In text
Taylor, George W.	et ux	4 A4	**324**	143.9	$5,000.00	P	
Hill, Samuel	est	1 E5	**325**	10.5	$300.00	C	no occupation
Bethesda Church		2 D10	**326**	8.8	$7,150.00	C	In text
Bowie, Mrs. Eugene		1 H9	**327**	67	$5,500.00	P	
Jones, Richard T		3 G2	**328**	98.4	$1,225.00	C	no occupation
Vaughan, William H.	et ux	1 K7	**329**	41.2	$250.00	P	no occupation
Powers, Ruth R	adm rx	2 C4	**332**	82	$1,000.00	P	no occupation
Powers, Ruth R	adm rx	2 A4	**333**	32.4	$150.00	P	
Massie, John	est	2 A2	**334**	7.2	$75.00	C	no occupation
Massie, John	est	2 B2	**335**	7.2	$100.00	C	
Jones, Luberty	et vir	1 J8	**336**	4.8	$700.00	P	
Rollins, Anne M.	et vir	4 F3	**337**	9.6	$245.00	C	
Taylor, Willis & Nancy	est	1 J4	**338**	30.6	$350.00	C	
Lee, Warren w.	et ux	1 J3	**339**	16	$325.00	C	no occupation
Travis, John R & Bowie, F. E.	et al	1 J4	**340**	49	$450.00	P	no occupation
Upper Zion Baptist Ch.Trustees w		6 A4	**341**	4.6	$11,000.00	C	
Clarke, Mary Elizabeth		4 F2	**342**	147.1	$4,000.00	P	
Jackson, Travis		4 D1	**343**	24.8	$210.00	P	
Armstead, Walter & Florence	et al	3 E11	**344**	15.80	$725.00	C	
Lonesome, Julie		3 D5	**345**	5	$75.00	C	no occupation
Dobbins, Alex	et al	4 D1	**346**	92.3	$1,300.00	C	
Rollins, Millie		2 E11	**347**	19	$400.00	P	
Johnson, William H.		4 C8	**348**	1.5	$325.00	P	
Travis, John R & Bowie, F. E.	et al	2 H7	**349**	17.2	$350.00	P	no occupation
Purks, Randolph F	et al	1 F4	**350**	9.6	$2,000.00	C	
Gordon, William		1 G10	**351**	16	$40.00	C	no occupation
Childs, B. H.		1 E10	**352**	54.8	$800.00	C	
Childs, B. H.		1 D10	**353**	6	$425.00	C	
Powers, Ruth R	adm rx	4 B1	**354**	79.3	$800.00	P	
Childs, W. B.		1 E10	**355**	45.2	$2,550.00	C	
Carter, Charles H.	est	4 D8	**356**	44	$1,450.00	P	
Sumner, Guy	et ux	1 D8	**359**	42.6	$5,500.00	P	
Buckner, Spencer	et ux	1 F11	**360**	15.8	$675.00	P	
Roy, Robert	est	4 E8	**361**	38	$1,000.00	C	
Powers, Ruth R	adm rx etal	4 D1	**362**	52	$850.50	C	
Mica Council Lodge #1057(Order of St. Luke) B		2 A9	**363**	0.5	$450.00	C	no occupation
Young, Maxwell		1 E10	**364**	45.8	$3,750.00	P	
Fletcher, Sarah	et al	1 D9	**365**	41.1	$1,750.00	P	no occupation
Cooper, William	est	1 F10	**366**	4.8	$700.00	C	
Bundy, Hattie	et al	4 B8	**368**	56.8	$3,000.00	C	
Wright, Ryan Gannet	et ux	4 E7	**369**	105.8	$1,350.00	P	
Union Bapt. Church, Trustees w		6 E4	**370**	1	$2,350.00	C	no occupation

Baylor, Emma	et al	1 F10	**371**	13.70	$300.00	C	no occupation
Powers, Ruth R	adm rx	3 J7	**372**	80	$900.00	P	
Young, William P		4 A2	**373**	23.2	$400.00	C	
Bowie, Ada Lou	et al	4 B2	**374**	70.4	$1,000.00	P	
Brown, John Henry		1 K9	**375**	6	$60.00	C	no occupation
Coleman, Nancy		4 D2	**376**	13.7	$9,500.00	C	In text
Gatewood, Bettie	est	4 F3	**377**	3.2	$7,500.00	C	
Lucas, John Arthur	est	1 J3	**378**	14.5	$425.00	C	no occupation
Johnson, Patrick	et al	1 J6	**379**	58	$1,600.00	C	
Johnson, Patrick	et ux	1 H5	**380**	21.6	$150.00	P	
Taylor, O. E & M. U.		4 D2	**381**	24	$150.00	C	
Vaughan, Elizabeth J		4 F3	**382**	18.8	$900.00	C	
Gordon, Mary	est	1 G10	**383**	15.2	$900.00	C	
Garnett, Julian W	et ux	1 G2	**384**	19	$500.00	P	
Morton, Melvina		2 A4	**385**	40	$420.00	C	
Mullen, G. T. & C. L.		1 G3	**386**	47.2	$1,300.00	C	no occupation
Denson, F. W. (Marice E.)	est	1 K4	**387**	40	$360.00	C	no occupation
Gordon, Robert V.	est	2 B1	**388**	42.5	$720.00	C	no occupation
Baylor, Arthur W	et ux	3 E4	**389**	50.00	$1,300.00	P	
Baylor, Arthur W	et ux	3 G6	**390**	53.20	$4,400.00	P	
Baylor, Clarence L		3 D6	**391**	5.20	$75.00	P	
Christopher, Joseph	et al	6 A7	**392**	36.5	$1,200.00	C	
Baylor, Eugene	et ux	3 D5	**393**	10.00	$430.00	P	no occupation
Baylor, Eugene	et ux	3 E4	**394**	14.00	$125.00	P	no occupation
Baylor, Eugene	et ux	3 F6	**395**	29.00	$1,450.00	P	
Baylor, Freddie E.	et ux	3 F5	**396**	13.60	$425.00	C	
Ferguson, Peter	est	5 A1	**399**	5	$400.00	C	
Brame, P. E.		6 C1	**400**	162.4	$1,100.00	C	no occupation
Farmer, Lloyd	et al	6 F9	**401**	68	$1,000.00	C	no occupation
Baylor, Lawrence W	et ux	3 F6	**402**	9.70	$1,350.00	P	
Baylor, Lawrence W	et ux	3 F5	**404**	35.50	$400.00	P	no occupation
Bruce, Seddon J	et ux	3 G8	**407**	122.9	$13,000.00	P	
Fry, Carrie		3 G4	**409**	4.8	$500.00	P	no occupation
Gray, Allice Carter & A. H.	et vir	6 A4	**410**	8	$3,000.00	P	no occupation
Garnett, John N	et ux	3 D9	**411**	85	$11,000.00	P	
Garnett, Lucy (Smith)	et vir	3 F5	**412**	10.6	$300.00	P	no occupation
Brooks, Frances	est	4 H2	**413**	6	$110.00	C	
Fletcher, Sarah		1 D11	**414**	25	$300.00	C	
Shelton, Rueben		2 A2	**415**	22.4	$132.00	C	
Carter, Mary G.	est	2 A2	**416**	22	$131.00	C	no occupation
Hauser, Theodore V	et al	2 D5	**417**	45.6	$800.00	C	no occupation
Johnson, Luther A. (Sarah)	et ux	4 G3	**418**	12.4	$1,250.00	P	
Jackson, Arthur,	et ux	1 D10	**419**	36	$2,200.00	P	
Lewis, Peter	est	2 A6	**420**	23.2	$140.00	P	no occupation
Lucas, Charles H	est	1 H4	**421**	14.5	$460.00	P	

Powers, Ruth R	adm rx etal	4 H1	**422**	7.8	$300.00	P	
Redd, John	est	2 A5	**423**	34.4	$400.00	P	no occupation
Roane, Ella D	et al	2 A6	**424**	23	$140.00	P	
White, James Edward		1 H6	**425**	23.3	$240.00	P	no occupation
Herring, Richard		1 D10	**426**	2	$20.00	P	no occupation
Jackson, Lee	et ux	1 D10	**427**	3	$50.00	P	no occupation
Vaughan, Charles		4 F3	**428**	13.4	$350.00	C	
Jones, Richard T	et ux	3 G4	**429**	48.2	$500.00	P	no occupation
Kay, Luther T. Jr.	et ux	3 H6	**430**	45.6	$500.00	P	no occupation
Ferguson, Joseph (Mattie)	est	1 F10	**431**	42.9	$727.00	C	
Kay, Luther T. Jr.	et ux	3 H5	**432**	297.2	$3,300.00	P	
Kidd, T.	et ux	3 J2	**433**	49.7	$2,870.00	P	
Carter, Bradford F. & Lizzie M	et ux	4 A7	**434**	128.4	$7,375.00	P	
Pendleton, Eugene	et al	1 K4	**435**	0.8	$25.00	C	no occupation
Powers, Charles P.	et ux	1 H5	**436**	30.5	$350.00	P	
Powers, Ruth R	adm rx	1	**437**	109.2	$1,250.00	P	no occupation
Rollins, William H. (Annie T.)	et ux	4 G3	**438**	34.5	$1,900.00	P	
Sale, Mary N	et vir	1 D9	**439**	2904	$500.00	P	
Samuel, John E.	et al	4 J3	**440**	78.4	$3,500.00	C	
Samuel, W. B.		4 H2	**441**	40	$2,550.00	C	
Samuel, N. Bagby	et al	4 H2	**442**	60.8	$3,500.00	C	
Samuel, Thomas H	et al	4 H2	**443**	40	$1,900.00	C	
Shackleford,Mrs.Billifield Cove	et al	3 J3	**444**	123	$6,300.00	P	
Stovall, Annie		2 F11	**445**	14.8	$210.00	C	no occupation
Travis, F. M.		4 E1	**446**	21.5	$300.00	C	
Sale, Mary N (Long)		1 E10	**447**	2709	$625.00	C	
Baylor, John W	et ux	3 F6	**448**	20.90	$350.00	P	no occupation
Bundy, William B		4 G4	**449**	16.4	$115.00	C	
Chinault, H. V.	et ux	7 D8	**450**	118.5	$2,200.00	P	
Johnson, Alice	est	4 H5	**451**	14	$120.00	C	
Jones, Ella	est	4 J5	**452**	13.8	$200.00	C	
Bundy, William B		4 H4	**453**	21.5	$1,050.00	C	
Clarke, Maurice Grady		4 H3	**454**	385.2	$6,000.00	P	
Baylor, Annie Bell		3 F6	**455**	40.80	$1,500.00	C	
Fitzgerald, Mary Baylor	et vir	3 F6	**457**	6.5	$300.00	P	no occupation
Baylor, Eugene	et ux	3 D5	**458**	15	not listed	not listed	no occupation
Baylor, Eugene	et ux	3 E6	**459**	15.30	$4,500.00	P	
Gray, George A	et ux	5 G6	**462**	86	$5,700.00	P	
Johnson, Frank		6 C 4	**464**	25	$300.00	P	no occupation
Derieux, Waring	et ux	3 G2	**465**	1	$75.00	P	no occupation
Elliott, Mrs. Loetilla		3 D9	**466**	8.41	$3,300.00	P	
Johnson, James T	et al	6 E3	**467**	1	$35.00	P	no occupation
Edwards, Linard H		3 B4	**468**	71	$3,700.00	C	
Farmer, Hattie C	et vir	6 D9	**469**	33.3	$400.00	C	no occupation
Greene, Jonnie	et vir	3 E6	**470**	12	$600.00	C	
Hardman, Ephraim L.	et al	3 H8	**471**	51.6	$2,200.00	C	

Jones, Willie L		2 G5	**473**	5.3	$35.00	P	
Kay, Thomas G.	et al	3 K5	**474**	465	$12,500.00	P	
Kay, M. B	et al	4 B6	**475**	350	$10,052.16	C	
Bruce, Warren B.		3 F10	**476**	113.5	$10,000.00	P	
Farmer, George R	et al	3 D3	**477**	171.2	$3,900.00	C	
Clark, Eva	et vir	7 D7	**478**	7	$600.00	P	
Keyser, Susie M	et vir	3 K2	**479**	55.8	$7,450.00	P	
Beazley, Frank B.	et al	6 E4	**480**	14	$275.00	C	no occupation
Garnett, Mary Lou (& Robert L)	et al	3 E8	**481**	139.8	$13,500.00	P	
Hardman, Ephraim L.		4 G9	**482**	38.1	$550.00	P	
Evans Ada M.	est	3 H8	**483**	56	$5,000.00	P	no occupation
Evans Ada M. (George P.Lyon)	est	3 G6	**484**	253.2	$4,250.00	P	no occupation
Powers, Ruth R	adm rx etal	3 J6	**485**	64.6	$450.00	C	
Richards, Roland	et ux	3 H6	**487**	32.7	$1,250.00	P	
Smith, John W.	et ux	3 J7	**488**	105.2	$2,000.00	P	
Elliott, Loetilla G.		3 D9	**489**	0.5	$50.00	P	no occupation
Minor, Nathan		1 K6	**490**	6.4	$250.00	C	
Elmore, Daisy H. (Hicks,C.F.)	et al	4 G1	**491**	54.6	$4,000.00	P	
Young, Daivd	est	4 C2	**492**	50	$425.00	C	
Rowlett, J. Henry		4 J4	**494**	120.4	$1,100.00	C	
Rollins, Ida (D. L.)	et al	4 J7	**495**	70	$3,600.00	P	
Johnson, Harry		4 J6	**496**	21.3	$150.00	C	
Holmes, Thomas	est	4 H5	**497**	42.3	$1,450.00	C	
Holmes, Thomas	est	4 H5	**497**	42.3	$1,450.00	C	
Page, Elnora & Robert		4 G1	**499**	62.4	$1,300.00	C	
Taylor, Clarence	et al	4 A9	**500**	30.8	$650.00	C	
Powers, Ruth R	adm rx etal	4 B8	**501**	52.8	$900.00	P	
Roy, Alex		4 A9	**502**	25.4	$540.00	C	
Brooks, Claude	et ux	4 A8	**503**	106	$5,400.00	P	
Bruce, W. B. & Etta H.		3 K8	**504**	116.2	$5,900.00	C	
Gray, Lyle B		4 E8	**505**	39.6	$1,175.00	C	
Hardman, Mattie&Katherine Smith		4 G5	**506**	39.4	$275.00	C	
Kay, Luther T. Jr	et ux	4 B7	**507**	650.6	$12,000.00	P	
Kay, Luther T. Jr.		3 E2	**508**	88.1	$4,000.00	P	no occupation
Myers, Norman	et al	4 C8	**509**	253	$11,000.00	C	
Phillips, James W	et ux	4 F7	**510**	95.1	$1,800.00	P	
Pratt, Beatrice		4 F4	**511**	34.6	$1,000.00	C	
Kay, Maurice B.		3 J6	**513**	147.8	$5,750.00	C	
Kay, Maurice B.	et al	4 A3	**514**	24.2	$200.00	C	
Robb, Irene P.	et al	4 D4	**515**	54.3	$3,800.00	C	
Taylor, Onan E.	et ux	4 C5	**516**	24.4	$600.00	P	
Pratt, Richard T.	et ux	7 F3	**517**	0.5	$50.00	P	not occupied
Wright, Lola M.	et al	4 F6	**518**	152.8	$4,000.00	P	
Kay, Maurice B.	et al	4 A3	**519**	55.4	$750.00	P	
Taylor, Onan E.	et ux	4 D4	**520**	180.6	$15,000.00	P	

Thomas, John E. & P. A. JR.	et al	4 D6	**521**	93.6	$1,900.00	P	
Thomas, John E.	et al	4 C4	**522**	102.5	$6,500.00	P	
Taylor, Onan E.	et ux	4 D4	**523**	93.7	$3,400.00	P	
Jones, Mildred L.	et al	3 G5	**524**	21.4	$1,150.00	P	
Frye, Annie E (Fries)	et vir	3 G4	**525**	16.7	$850.00	P	no occupation
Powers, Ruth R	adm rx	3 H6	**527**	40	$500.00	C	
Smith, Mattie		4 E3	**528**	22.6	$400.00	C	
Houston, Frank M	et al	6 A4	**529**	4	$2,300.00	C	
Houston, Frank M	et al	6 A4	**529**	4	$2,300.00	C	
Powers, Frances	est	4 E9	**530**	78.9	$700.00	C	
Reeves, Lawrence		4 F5	**531**	139.6	$2,400.00	C	
Powers, Ruth R	adm rx	4 C10	**532**	119.2	$2,400.00	C	
Parker, J. R.		4 D9	**533**	27.7	$2,250.00	C	
Monroe, John E	est	4 G4	**534**	41.9	$575.00	C	
Martin, Wren C. (Maggie)	et ux	4 H7	**535**	54.2	$2,000.00	P	
Holmes, Isabella		4 D2	**537**	24	$200.00	C	
Holmes, Isabella		4 D2	**537**	24	$200.00	C	
Hearn, Lucy Etta (C.K.)	et al	4 H6	**538**	186.4	$700.00	P	
Hearn, Lucy Etta (C.K.)	et al	4 H6	**538**	186.4	$700.00	P	
Henderson, Blanche U.	et vir	4 G5	**539**	111.6	$3,150.00	P	
Henderson, Blanche U.	et vir	4 G5	**539**	111.6	$3,150.00	P	
Holloway, Joseph M	et ux	4 E5	**541**	235	$11,750.00	P	
Holloway, Joseph M	et ux	4 E5	**541**	235	$11,750.00	P	
Johnson, Henry	est	4 J6	**542**	16	$725.00	C	
Sale, Percell D.		4 E4	**543**	64.6	$950.00	C	
Taylor, James H. & Henry	et al	4 E5	**544**	42.3	$900.00	C	
Parker, Lavina	et al	4 D4	**546**	6.2	$400.00	C	
Hardman, Ephraim L.	et al	3 H8	**547**	14.3	$350.00	P	no occupation
Hardman, Ephraim L.	et al	3 H8	**548**	4.4	$150.00	P	no occupation
Garnett, Montgomery G.	est	3 G7	**549**	165	$3,600.00	P	
Acors, Mary E.& James B.,Jr.	et al	3 F7	**550**	109.80	$9,000.00	P	
Walker, Willie	et ux	4 G9	**551**	176	$4,500.00	P	
Carter, W. R.	est	4 H6	**552**	107.6	$2,400.00	C	
Powers, Ruth R	adm rx	4 H5	**554**	1	$25.00	P	
Watts, Virginia, A. C.	et al	4 J3	**555**	76.9	$900.00	C	
Baylor, Beulah	et ux	3 C6	**556**	23.20	$1,400.00	P	
Broaddus, Harvey S		5 B1	**557**	145.8	$10,000.00	P	
Cash, A. W., W.S., D.S.	et al	4 G7	**562**	316.8	$3,200.00	C	
Edwards, Carl A.	et ux	3 B3	**563**	35.2	$2,400.00	P	
Edwards, Mack L		3 C4	**564**	62.8	$775.00	C	
Farmer, Frank P	et ux	1 J1	**565**	0.01	$30.00	P	no occupation
Holmes, Ellis	et al	6 D4	**567**	12.6	$200.00	C	no occupation
Johnson, Eugene	et al	3 C6	**568**	5.1	$150.00	C	
Johnson, Garfield	et ux	3 C6	**569**	56.2	$3,600.00	P	
Brooks, Aubrey A		5 A1	**570**	30	$600.00	C	
Broaddus, Madeline	et al	5 D2	**571**	120	$7,000.00	C	

Kay, Luther T. Jr.	et ux	4 F9	**572**	371.1	$12,750.00	P	
Campbell, Effie		4 D3	**573**	41.6	$1,000.00	C	
Monroe, Mary		3 36	**574**	4.9	$75.00	C	no occupation
Pendleton, John T		3 D6	**575**	79.2	$2,200.00	C	
Reynolds, Phillip U.		3 D3	**576**	21.4	$200.00	C	no occupation
Smith, Floyd S.	et ux	3 K3	**578**	139	$2,000.00	P	
Samuel, Thomas A.	est	6 B9	**580**	125	$27.00	C	
Phillips, James William		4 D8	**581**	60.2	$1,500.00	C	
Taylor, Onan E. & Audrey	et al	4 B5	**583**	109.2	$3,000.00	P	
Upshaw, Lafayette		3 C7	**584**	19.5	$1,310.00	C	
Bruce, Spurgeon E.	et ux	3 G9	**585**	57.2	$8,000.00	P	
Upshaw, Lafayette	et al	3 C7	**586**	20.8	$590.00	C	no occupation
Upshaw, Richard V	et ux	3 D7	**587**	36	$2,600.00	P	
Beazley, Andrew	et ux	6 B6	**588**	20	$400.00	P	no occupation
Bruce, Warren B.	et ux	3 F8	**589**	167.7	$10,000.00	P	
Adams, John Q	et ux	3 C2	**590**	323.80	$5,800.00	P	no occupation
Loving, Julian	est	3 C4	**592**	155.6	$3,700.00	C	
Reynolds, Phillip U.	et ux	3 C5	**593**	92.3	$5,800.00	P	
Ruffin, Joseph Spencer	et ux	3 B5	**595**	91.2	$3,000.00	P	
Smith Peter		1 J8	**596**	4.8	$30.00	C	no occupation
Ellis, Victoria		1 K9	**598**	16.8	$525.00	C	
Sale, Percell D.		4 D3	**600**	4.8	$800.00	C	
Garnett, James E	et ux	3 E6	**601**	1.7	$120.00	P	no occupation
Carlton, James Elmo	et ux	4 H7	**602**	119.6	$1,100.00	P	
Baylor, Wilcie C. & Annie F	et ux	3 G5	**604**	124.20	$4,150.00	P	
Baylor, Wilcie C. & Annie F	et ux	3 F4	**605**	68.80	$2,700.00	P	
Wright, Luther E. (Walter S.)	et al	6 F8	**606**	100	$1,900.00	P	
Powers, Ruth R	adm rx	4 G5	**607**	96.6	$5,000.00	P	
Powers, Ruth R	adm rx	4 E7	**608**	92.9	$2,100.00	P	
Corbin, Gatchell & Farley B.	et al	3 B3	**609**	81.2	$7,000.00	P	
Conway, George F.	et al	4 F4	**610**	284.4	$1,000.00	P	
Adams, John Q	et al	3 E2	**611**	42.30	$600.00	P	no occupation
Broaddus, C. A. & W. R.		3 D7	**614**	70.4	$1,450.00	C	
Brooks, Willie L.(Ellis M.)	ex etal	3 D7	**615**	176	$900.00	C	
Frye, Ida	et vir	3 B7	**617**	12.8	$2,450.00	P	
Fortune, James R.	et ux	3 H8	**618**	10.1	$350.00	P	no occupation
Travis, R. C.	et al	5 H1	**620**	732.2	$24,500.00	C	
Gouldin, James D. C. Jr.	et al	3 B2	**621**	238.8	$6,250.00	P	
Hicks, Samuel		3 B6	**622**	34.4	$1,200.00	P	
Hicks, Samuel		3 B6	**622**	34.4	$1,200.00	P	
Harris, Maude E		7 F4	**623**	243	$9,800.00	C	
Johnson, Cora	et vir	3 C6	**624**	14.5	$200.00	C	
Johnson, Eugene	et al	3 C7	**625**	8.6	$700.00	P	no occupation
Jackson, Jacob N.		3 F2	**626**	51	$700.00	C	no occupation
Penny, Charles C.	et ux	6 E3	**627**	159.1	$9,000.00	P	
Holms, Josephine & Lewis	est	3 D7	**628**	13.1	$200.00	C	no occupation
Loving, Elwood		3 F3	**629**	20.8	$250.00	C	

Minarchi, Nick		3 A2	**630**	24	$650.00	C	no occupation
Powers, Ruth R	et al	3 D6	**632**	36.4	$1,500.00	P	
Powers, Ruth R	adm rx	H4	**633**	13.9	$75.00	P	
Farmer, Clarence S..	et ux	6 J4	**634**	429	$10,750.00	P	
Farmer, Harry	et al	6 K2	**635**	64	$2,400.00	P	no occupation
Trice, George W		4 D10	**636**	182.5	$5,800.00	C	
Snell, Ethel H	et vir	3 D6	**637**	56	$2,000.00	P	
Garnett, Albert,	est	6 J3	**638**	25	$706.00	C	
Boyle, Martha S	et vir	7 H5	**639**	110	$2,224.00	P	
Upshaw, Eugenia		3 C7	**640**	10	$785.00	C	
Fortune, James R.	et ux	3 H8	**641**	171.1	$4,800.00	P	
Hardman, Mary		4 E3	**642**	5	$150.00	C	
Holmes, James A		4 H4	**643**	9	$100.00	C	
Holmes, James A		4 H4	**643**	9	$100.00	C	
Carneal, Edmond S.	et ux	1 D10	**644**	30.4	$1,600.00	P	
Jones, Mary E.		1 K9	**645**	14	$125.00	C	
Kay, Luther T. Jr. (R. A.)	et al	3 E3	**646**	175.2	$7,020.87	C	no occupation
Powers, Ruth R		4 B2	**647**	26.5	$200.00	P	
Wright, Kate G. (J. J.)	et al	3 D8	**648**	113	$9,000.00	P	
Snell, Mamie T.	et al	3 E5	**649**	202	$5,750.00	C	
Loving, Ross J	et ux	3 D4	**650**	84.5	$1,200.00	P	
Sutton, Garnett G		3 E5	**651**	54.8	$500.00	C	no occupation
Taylor, Frances		1 F11	**652**	6.6	$225.00	C	
Harris, Charley (Charlie?)		1 C9	**653**	0.4	$15.00	C	no occupation
Frye, Gusa d	et ux	3 E4	**654**	116.4	$3,200.00	C	
Buckner, Rosa E.	et vir	1 F10	**655**	6.6	$600.00	P	
Bruce, Homer	et al	3 E4	**656**	16.3	$125.00	C	no occupation
Baylor, Melvin	et ux	1 D8	**658**	1.10	$500.00	P	
Baylor, Lawrence W	et ux	3 E6	**659**	13.20	$300.00	P	no occupation
Baylor, Lawrence W	et ux	3 F6	**660**	6.80	$150.00	P	no occupation
Powers, Ruth R	adm rx etal	3 F3	**661**	91.1	$850.00	P	
Elliott, Zoettilla		3 E10	**662**	18	$425.00	P	no occupation
Powers, Ruth R	adm rx	5 C3	**663**	20	$400.00	P	
Samuels, Nannie (Julia)	et al	5 A1	**664**	12.5	$500.00	P	
Taylor, Lloyd G. & Lelia	et al	5 C2	**666**	101.5	$6,750.00	P	
Brooks, Willie L.(Ellis M.)	etal	3 E4	**667**	58.4	$750.00	C	no occupation
Powers, Ruth R	adm rx etal	3 F3	**668**	78	$1,850.00	C	
Andrews, James C & Clemetta		5 E3	**669**	117.00	$2,500.00	P	
Powers, Ruth R	adm rx	1 C11	**669**	27.8	SEE PAGE 2		
Andrews, James C & Clemetta		5 D2	**670**	127.00	$6,700.00	P	
Bruce, Lucian F.	et ux	5 E1	**671**	75	$2,600.00	P	
Broaddus, Victoria Green		6 J2	**672**	20	$300.00	C	no occupation
Broaddus, Alice M.		3 C10	**673**	91.5	$5,300.00	C	
Cook, George B.	et ux	4 J8	**675**	22	$325.00	P	

Elliott, J. W.		3 G11	**676**	213.8	$10,000.00	C	
Gray, Harriet B		6 K1	**677**	90	$2,600.00	P	
Elliott, Waverly C.		3 C9	**678**	15.2	$2,700.00	C	
Elliott, Waverly C.		3 D10	**679**	18	$350.00	C	no occupation
Farmer, Jennie		3 E9	**680**	36.5	$2,500.00	P	
Ferguson, Herbert (W. L. Roane)	et ux	4 J11	**681**	4	$140.00	P	
Garnett, Eddie L.		3 D9	**682**	51.8	$8,637.00	C	
Reynolds, Phillip U.-Holiness Church site		3 B5	**686**	1.5	$1,000.00	P	
Powers, Ruth R	adm rx	1 F8	**687**	21.2	$800.00	P	
Norman, Willie Lee, Sr	et al	1 C10	**688**	10.5	$700.00	P	
Myers, Mathew		3 C6	**689**	6.5	$100.00	C	no occupation
Myers, Martin & Millie		3 C6	**690**	11.9	$160.00	C	no occupation
Gilmore, Lawrence & Wife		1 D11	**693**	2	$50.00	C	no occupation
Powers, Ruth R	adm rx etal	3 C8	**695**	94.8	$1,850.00	C	
Powers, Ruth R	et al	1 C10	**696**	28.8	$425.00	C	no occupation
Thornton, Edward G.& Mattie T.	et al	3 C1	**698**	294.6	$7,500.00	P	
Thornton, Edward	et al	3 D1	**699**	44.6	$850.00	C	
Turpin, J. O. & William G.		3 D2	**700**	203.2	$1,600.00	C	no occupation
Norman, Littleton	est	3 B1	**701**	21.9	$1,300.00	C	
Norman, Eliza		3 B1	**702**	5.2	$450.00	C	
Jopher, John	et ux	3 B7	**703**	12.4	$240.00	P	
Buckner, Mary L.		3 B1	**704**	20	$600.00	C	
Brooks, C. A. & R. L.	est	3 E1	**705**	270.4	$6,200.00	C	
Powers, Ruth R	adm rx etal	3 C3	**707**	88.8	$1,250.00	P	no occupation
Baylor, Lawrence W & Martha	et ux	1 F8	**708**	29.50	$350.00	P	no occupation
Norman, Frank C.	et us	3 B1	**709**	14.3	$1,100.00	P	
Broaddus, James Pelham		5 F2	**710**	61	$1,550.00	P	
Broaddus, James P.	et al	3 E10	**711**	385.5	$1,400.00	C	
Broaddus, Wayland S.	et ux	5 F2	**712**	135	$8,800.00	P	
Chinault, Arthur L	et ux	3 G11	**713**	24	$400.00	P	no occupation
Chinault, Arthur L	et ux	3 F11	**714**	34.5	$3,600.00	P	
Coleman, Henry	et ux	6 E4	**715**	25	$600.00	P	
Evans, James	et ux	3 F11	**716**	10	$475.00	P	
Farmer, Taylor	et ux	6 E7	**717**	40	$2,600.00	P	
Ferguson, Ella	et al	6 J1	**718**	128.75	$2,300.00	P	
Henderson, Blanche U.	et al	6 B4	**719**	54.8	$3,000.00	C	
Henderson, Blanche U.	et al	6 B4	**719**	54.8	$3,000.00	C	
Jones, Richard T (Henderson, B.V.)	et al	6 C3	**720**	54.5	$1,200.00	P	no occupation
Lumpkin, Annie B	et vir	6 H2	**721**	15	$2,700.00	P	
Lumpkin, Annie B	et vir	6 H2	**722**	32	$525.00	P	no occupation
Lumpkin, Jessie F	etux	6 H2	**723**	49	$1,626.00	P	
Martin, Harry	et ux	6 C5	**724**	367.5	$7,000.00	P	
Mundie, Melchie M.	et al	6 B4	**725**	120.5	$2,500.00	C	
Mundie, Melchie M.	et ux	6 E7	**726**	7	$50.00	P	no occupation
Mundie, Melchie M.	et ux	6 E7	**727**	39	$3,150.00	P	

Myers, Martin, & Millie		3 C6	**728**	23	$160.00	C	
Myers,Jack	et ux	3 G11	**728**	23	$300.00	P	no occupation
Poats, J. W.	et ux	6 A4	**729**	1.1	$750.00	P	
Morton, Frank	et ux	7 E4	**731**	200	$3,050.00	P	not occupied
Sale, Wilber Evans	et al	3 f11	**733**	219	$7,250.00	C	
Sheppard, Harry D (Catherine)	et al	3 c9	**734**	5	$300.00	C	
Stuart, Edward & Katherine	et al	5 C1	**735**	6	$350.00	C	
Travis, Maude B		3 H10	**736**	510.5	$13,500.00	C	
Washington, Annie	et vir	5 E1	**737**	18	$625.00	P	
Morton, Virginia E.		7 E4	**738**	7	not listed	not listed	not occupied
Elliott, J. W.		6 C4	**739**	49.2	$1,800.00	C	
Nodzak, Stefan	est	1 C11	**740**	87.8	$4,300.00	C	no occupation
Koday, John	et ux	1 C11	**741**	78.7	$5,300.00	P	
Jackson, Jacob N.	et al	3 F2	**742**	49	$700.00	P	no occupation
Brooks, R. Lewis	est	3 A1	**743**	3.1	$225.00	C	
Farmer, Arthur	et ux	6 D8	**745**	33.3	$2,150.00	P	
Bowie, Willing	et al	3 F1	**746**	209	$7,300.00	P	no occupation
Parker, Bertha	et vir	6 E9	**747**	37.3	$750.00	P	no occupation
Epps, Emanuel	et ux	6 F6	**748**	33.5	$1,400.00	P	
Johnson, James A.	et ux	6 G5	**749**	7	$400.00	C	
Jordan, W. Frances	et ux	6 F5	**750**	218	$6,000.00	P	
Martin, Harry	et ux	5 H4	**752**	47	$4,600.00	P	
Martin, Harry	et ux	5 H3	**753**	92.5	$3,800.00	P	
Motley, E. Henry	et al	6 C6	**754**	103.2	$1,400.00	C	
Penny, Joseph E	et ux	6 D3	**755**	152	$7,000.00	P	
Powers, Ruth R	adm rx	6 D4	**756**	16.5	$550.00	P	no occupation
Broaddus, W. Russell	et al	3 C10	**757**	65.5	$1,640.00	P	
Beazley, Everette J.	et ux	6 C6	**758**	37	$500.00	P	no occupation
Gray, Reta Reeves		6 B4	**759**	51	$900.00	P	no occupation
Gray, Reta Reeves	et al	6 B3	**760**	22.5	$600.00	C	
Jones, Susie (Virginia)	et al	6 E4	**761**	19	$750.00	P	In text
Jones, Jennie		6 E4	**762**	8.3	$100.00	P	no occupation
Johnson, C. C.	et ux	6 D3	**763**	8.3	$120.00	C	no occupation
Johnson, Robert B.		6 D4	**764**	28.3	$750.00	C	
Taylor, John Henry & James		4 C9	**765**	35	$500.00	C	
Thornton, Thurston	et ux	6 F4	**766**	15	$1,100.00	P	no occupation
Johnson, Harry Lee		6 D3	**767**	8.3	$300.00	P	
Wright, Andrew L.	et ux	6 F5	**768**	60	$3,750.00	P	
Lonesome, J. L	est etal	4 C9	**769**	20.8	$200.00	C	
Broaddus, Cornelius	et al	5 D3	**770**	216	$6,200.00	C	In text
Fawner(Fraughnaugh) John	est	5 D2	**772**	70	$3,800.00	C	
Fawner(Fraughnaugh) John & A,		5 D6	**773**	50	$3,200.00	C	
Meyer, J. Bond (Wright, E. B.)	et al	5 C3	**774**	156	$8,682.33	C	
Myers, Aubrey	et al	5 C6	**775**	10	$150.00	C	
Myers, Aubrey	et al	5 C4	**776**	28	$300.00	C	
Purce, John R Julia		4 A9	**777**	45.2	$2,600.00	C	
Motley, W. Bowie	et ux	6 G5	**778**	80	$3,150.00	P	

Winder, Allie B. (Lucy Howard)?	et vir	5 C4	**779**	90	$3,750.00	P	
Smithers, H. B.		4 B10	**780**	77.9	$550.00	C	
Roy, Andrew, Cornelivst & Onedia		4 G9	**781**	43.2	$800.00	C	
Phillips, Mary	est et al	4 E9	**782**	63.2	$700.00	C	
Carter, Melvin	et ux	6 D2	**783**	43.2	$2,000.00	P	
Bruce, Brewer V.	et ux	4 B9	**784**	72.8	$5,250.00	P	
Powers, Ruth R	adm rx	4 J8	**785**	329	$5,250.00	P	
Fed. Farm Mortgage Co		6 B1	**786**	77.3	$1,700.00	P	
Gray, George Allen	et ux	6 D6	**787**	72.4	$2,400.00	P	
Broaddus, W. Russell & C.A.	et al	3 C7	**788**	165	$800.00	C	no occupation
Howard, Lucy		5 C4	**789**	90	$3,300.00	P	
Taylor, Maitland, U.	et al	4 A10	**790**	381.2	$14,000.00	C	
Jones, Arthur	et ux	4 H8	**791**	14	$475.00	P	
Jordan, Charles M		6 E1	**792**	44.6	$400.00	P	
Lonesome, George F	et ux	4 C9	**793**	33.8	$2,400.00	P	
Miller, Burlley	et ux	4 E11	**794**	158.4	$1,750.00	P	
Pickett, George W	et ux	4 C9	**795**	100	$6,000.00	P	
Presgraves, Stanley T		6 G3	**796**	506.5	$8,575.00	C	
Ramsey, J. C.		4 H8	**797**	19.6	$800.00	C	
Rollins,W. A.	est	4 H7	**798**	132	$3,000.00	C	
Taliaferro, Ernest		6 C2	**799**	94.8	$950.00	P	
Taylor, Moses		4 C9	**800**	20	$625.00	C	
Wright, W. Melvin	et ux	6 F3	**801**	140.8	$1,800.00	P	
Wright, Alice B.	et al	6 E2	**802**	102.4	$1,600.00	C	no occupation
Powers, Ruth R	adm rx	3 F9	**803**	101.4	$3,200.00	P	
Pitts, Lucy Taylor		6 A3	**804**	118	$3,800.00	P	
Penney, Eustace M.	et ux	5 G1	**805**	211.6	$6,800.00	P	
Gravatt, William Ancel & Jeanette	et al	6 G2	**806**	153	$4,155.00	P	
Ferguson, Alex	est	6 F1	**807**	129.2	$1,000.00	C	no occupation
Elliott, William C. (W.L./Beale R.L.	et al	3 C9	**808**	2.4	$300.00	C	no occupation
Caroline Co. Farmers COOP		3 F11	**809**	1	$4,100.00	P	
Dorsey, G. R.		3 J10	**810**	190.8	$4,000.00	P	
Bruce, Joseph H.	et ux	4 A11	**811**	130.4	$800.00	P	
Whittaker, Wilford		6 G2	**812**	235	$6,000.00	P	
Saunders, Mary Walton	et al	4 H10	**813**	12.8	$300.00	C	
Wharton, Julian L.	et al	6 F1	**814**	54.4	$2,100.00	P	
Rollins, William B (Sam)	et al	4 H8	**815**	52.1	$550.00	P	
Powers, Ruth R	adm rx	6 C2	**816**	104	$2,200.00	P	
Ayers, Joseph & Ara	et ux	3 K9	**817**	40.00	$1,000.00	P	
Chandler, John	et al	6 B2	**818**	40	$1,000.00	P	
Ferguson, Myrtle		6 B3	**819**	57	$950.00	P	
Garnett, Larry	etux	3 J10	**820**	150	$5,000.00	P	
Lonesome, Ben	et ux	6 E3	**821**	2.5	$100.00	P	no occupation
Jones, Virginia Lonesome		6 E3	**822**	2.5	$10.00	C	
Lonesome, Ben	et al	6 E3	**823**	39.2	$1,300.00	P	
Motley, Maude B.	et al	6 B3	**824**	57.2	$4,100.00	C	no occupation

Farmer, Taylor	et ux	6 D8	**825**	34	$550.00	P	no occupation
Pitts, Charlie B	et ux	5 H3	**826**	114	$5,200.00	P	
Powers, Ruth R	adm rx	3 J9	**827**	26	$525.00	P	
Houston, DeWitt C		6 G8	**828**	66	$1,100.00	C	
Houston, DeWitt C		6 G8	**828**	66	$1,100.00	C	no occupation
Elliott, Russell J	et al	6 B1	**829**	212.2	$8,500.00	P	
Garnett, Charles W	et ux	6 D1	**830**	273.6	$4,200.00	P	
Grizzard, Edgar B		4 A9	**831**	4.29	$175.00	C	
Golden, Mary F		6 H1	**832**	18.75	$1,350.00	C	
Jordan, Charles Murray	et al	6 H1	**833**	156.2	$2,900.00	C	
Jordan, Charles M		4 G10	**834**	287.1	$4,400.00	P	
Myers, Otho	et ux	5 D4	**835**	8	$900.00	P	
Smithers, J. D.		4 A9	**837**	0.5	$2,000.00	P	In text
Harris, Robert W.	et ux	6 E8	**838**	138	$3,000.00	P	
Harris, Robert W.	et ux	6 E8	**838**	138	$3,000.00	P	
Trice, Jane w.	est	4 D9	**839**	62.4	$1,500.00	P	
Moore, Grace T	et al	6 F6	**840**	129	$2,300.00	P	
Wright, Dewey R.	et ux	4 A10	**841**	55.2	$3,200.00	P	
Dorsey, G. R. (Davis, J. P.)		5 J7	**842**	134	$3,660.00	P	
Union Bk & Trust Co. Inc		6 D1	**843**	361.6	$4,000.00	P	
Hicks, Alvin B.	et ux	3 K10	**844**	142	$5,950.00	P	
Walker, Willie	et ux	6 A1	**845**	44	$900.00	P	no occupation
Whittaker, Andrew d		4 A10	**846**	30	$3,500.00	P	
Parker, Bertha (Willie)	et vir	6 E8	**847**	108.5	$5,100.00	P	
Phillips, May C.	est	4 E8	**848**	32	$800.00	C	
Phillips, May C.	est	4 D8	**849**	17.2	$2,350.00	C	
Johnson, James	et al	6 E3	**850**	16.6	$265.00	C	no occupation
Ferguson, Herbert	et ux	4 J10	**851**	198	$3,000.00	P	
Myers, Roland		5 C6	**852**	10	$175.00	P	
Tucker, John H	et ux	5 E5	**853**	76	$7,100.00	P	
Vaughan, Ernest	et ux	6 E4	**854**	125	$3,250.00	P	
Miller, Wilson	et ux	6 E4	**855**	52	$1,550.00	P	
Jones, John L		6 E5	**856**	20	$500.00	P	
Powers, Ruth R.(John L.Jones)	adm rx etal	6 E5	**856**	126.4(20)	$500.00	P	
Phillips, May C.	est	4 E8	**857**	26	$600.00	C	
Carter, Philip Rowland		6 A3	**858**	148.6	$1,500.00	P	no occupation
Carter, Philip Rowland		5 J3	**859**	76	$500.00	C	
Schools, Carrie B	et vir	6 B6	**860**	20	$900.00	P	
Vaughan, Clem		6 D6	**861**	10	$125.00	P	
Johnson, Philip	est	6 34	**862**	1	$25.00	C	no occupation
Sales, John Hamilton	est	6 D5	**863**	31.5	$300.00	C	no occupation
Whittaker, Belle	et al	6 D7	**864**	62.7	$850.00	C	
Wright, James	et al	6 D6	**866**	19.5	$800.00	P	
Sale,Delia	et vir	6 D6	**867**	36	$750.00	P	
Sale, Alexander	et al	6 D6	**868**	61.5	$1,450.00	C	
Wright, Nora C (James Henry)	et al	6 G6	**870**	83	$2,850.00	P	

Holmes, Ellis J.		6 D4	**871**	52.5	$1,400.00	P	
Holmes, Ellis J.		6 D4	**871**	52.5	$1,400.00	P	
Johnson, Frank & Belle		6 C4	**872**	20	$400.00	C	
Holmes, Sally		6 E7	**873**	17	$250.00	P	no occupation
Chinault, J. M.	et ux	5 E6	**875**	143	$5,800.00	P	
Holmes, Major	est	6 E7	**876**	8	$140.00	C	no occupation
Gray, Mack C.	et ux	6 C4	**877**	25.8	$620.00	P	
Jackson, William H (Mabel)	et ux	6 E4	**878**	5	$100.00	P	no occupation
Vaughan, Otho L.	et ux	6 E6	**879**	107	$2,500.00	P	
Brooks, Bettie A.		5 F4	**880**	225	$5,100.00	P	
Gouldin, Robert (Pattie)	et al	5 J4	**881**	162.5	$10,250.00	P	
Puller, Clyde W.	er ux	5 H7	**882**	52	$1,450.00	P	
Puller, Clyde W.	et ux	5 H7	**883**	25	$2,450.00	P	
Latney, Humphrey	et al	5 H6	**884**	84	$1,650.00	C	
Christopher, William	et ux	5 H6	**885**	25	$1,450.00	P	
Gray, C. B.	et ux	5 H6	**886**	57	$3,200.00	P	
Campbell, Nellie J.	et vir	5 E3	**887**	1	$125.00	P	
Latney, Humphrey	et al	5 E6	**888**	30	$2,250.00	C	
Christopher, J. C.	et al	5 E6	**889**	36	$1,550.00	C	
Broaddus, J. J.	et al	5 F1	**890**	133	$6,300.00	P	
Brooks, Bessie M & J. A.	et al	5 G5	**891**	323.5	$9,000.00	P	
Wright, James H	et ux	5 G3	**892**	100	$5,750.00	P	
Carter, T. J. (Judson)		5 E2	**893**	97	$6,100.00	C	
Andrews, Richard B		5 G2	**894**	118.00	$3,200.00	P	
Campbell, Leonard & Effie		5 E2	**895**	60.5	$3,060.00	C	
Carter, Russell Webb & Elizabeth	et ux	5 H4	**896**	42.2	$3,550.00	P	
Whittaker, W. Scott	est	5 D5	**897**	111.5	$3,400.00	C	
Gravatt, W. D.	et al	5 B3	**898**	17	$450.00	P	
Sale, Lawrence (William)	et al	5 B4	**899**	20	$825.00	P	
Carter, A. J.		5 F3	**901**	385	$9,240.00	C	
Brooks, C. S.		5 E5	**902**	80	$1,600.00	C	
Saunders, Ada (Julian)	et al	5 C4	**903**	80	$2,300.00	P	
Brooks, Fred K.		5 F4	**905**	80	$4,700.00	P	
Phillips, May C.	est	4 D9	**907**	36.8	$475.00	C	
Kay, Luther T. Jr.	et ux	5 D1	**908**	10	$150.00	P	
Parr, B. L.	et ux	6 A4	**909**	59.66	$2,500.00	P	
Roberts, Frances A (P. A.)	et al	5 B1	**910**	103.5	$2,600.00	C	
Roberts, Frances A	et al	5 C1	**911**	23	$700.00	C	
Saunders, Walter	et ux	6 K1	**912**	75.75	$1,700.00	P	
Wright, E. B.	et ux	6 A4	**913**	0.5	$1,800.00	P	
Wright, Erma G (Ed)	et ux	5 H5	**914**	205	$4,000.00	P	
Wright, Rockie & Eddie B	et vir	5 J5	**915**	68	$1,800.00	P	
Young, Willie D	et al	6 A7	**916**	229	$4,250.00	C	
Young, Walter G	est	6 A6	**917**	51.5	$1,650.00	C	
Proctor, Frank B.	et al	5 F6	**918**	71.8	$850.00	C	
Proctor, Frank & John R.	et al	5 F6	**919**	71.5	$2,625.00	C	
Proctor, Frank& John R.	et al	5 F6	**920**	14.5	$175.00	C	

Dennis, Alexander	est	6 H7	**921**	72.5	$1,000.00	C	no occupation
Farmer, Samuel F	et ux	6 G6	**922**	90	$4,500.00	P	
Wright, Julian B.	et ux	6 G7	**923**	30	$1,700.00	P	
Sheppard, Florence		3 C10	**924**	45	$550.00	P	no occupation
Farmer, Samuel F	et ux	6 G5	**925**	52.5	$750.00	P	no occupation
Gibson, Anna Johnson	et al	6 G11	**926**	59.25	$1,000.00	C	no occupation
Johnson, Virgie M.	et al	6 G11	**927**	18.5	$400.00	C	
Chinault, R. B.	et al	6 H7	**928**	30	$1,500.00	C	
Chinault, R. B.	et al	6 G8	**929**	25	$400.00	C	
Elliott, E. P.	et al	6 H9	**930**	30	$1,300.00	C	
Elliott, Eustace M		6 H9	**931**	4	$130.00	P	no occupation
Jordan, Femie		6 H7	**932**	30	$750.00	C	
Johnson, Julian L	et al	6 H6	**933**	5	$400.00	C	
Jordan, Everett C	et ux	6 B8	**934**	154	$4,700.00	P	
Loving, Carter L.		6 J11	**935**	6	$400.00	C	no occupation
Morris, Pearl E.	et al	6 H6	**936**	30	$1,200.00	C	
Turner, John	et al	6 J3	**937**	5	$750.00	P	
Hayes, Ida		6 G9	**938**	60	$650.00	C	no occupation
Ilgenritz, Pearl E (Fritz)	et al	6 B8	**939**	76	$3,150.00	P	
Jones, M. H.	et al	6 B8	**940**	149	$77.00	P	
Jones, Robert Lee	et ux	6 C7	**941**	234.5	$15,000.00	P	
Johnson, Eliza	est	6 G8	**943**	8	$65.00	C	no occupation
Johnson, Salina		6 G8	**944**	6	$50.00	C	no occupation
Jackson, Andrew	est	6 G7	**945**	5	$200.00	C	
Samuel, Frances,	est	6 F9	**946**	26	$400.00	C	
Taylor, Arthur L	et ux	6 F10	**947**	11.6	$500.00	P	
McDonald, Willie Webb	et ux	6 F10	**948**	40	$1,100.00	P	
Jeter, Henry W.	et al	6 G9	**949**	26	$925.00	C	
Jeter, R. E.	est	6 G9	**950**	33	$750.00	C	
Johnson, Eustace M	et ux	6 H10	**951**	42.5	$1,250.00	P	
Parker, Hartwell	et al	6 H10	**952**	56.5	$425.00	C	no occupation
Whiting, Thomas		6 H8	**953**	4.8	$125.00	P	no occupation
Bruce, James P	et al	6 H9	**954**	67.2	$3,200.00	C	
Wheely, Judson T.		6 G10	**955**	165.8	$5,250.00	P	
Anderson, W J	et ux	6 D9	**956**	210.00	$3,900.00	P	no occupation
Carter, Napolen B (Melvin on map)	et al	6 G8	**957**	48.5	$800.00	P	
Carter, Melvin	et al	6 G7	**958**	25	$275.00	C	no occupation
Dennis, Henry		6 H8	**959**	15	$150.00	C	no occupation
White, Major		6 G7	**960**	8	$125.00	C	no occupation
Powers, Ruth R	adm rx	6 G9	**961**	30	$350.00	P	no occupation
Powers, Ruth R	adm rx	6 H8	**962**	15	$200.00	C	no occupation
Farmer, Virginia R.	et al	6 H7	**963**	33	$1,400.00	C	
Johnson, Danbridge	est	6 H11	**964**	6	$1,500.00	C	no occupation
Powers, Ruth R	adm rx	6 G10	**965**	11	$300.00	C	no occupation
Powers, Ruth R	adm rx	6 G7	**966**	45.5	$1,600.00	P	no occupation
Powers, Ruth R	adm rx	6 C9	**967**	29.5	$325.00	P	
Powers, Ruth R	adm rx	6 C8	**968**	57	$325.00	P	no occupation

Wright, Melvin	et ux	6 G8	**969**	63	$900.00	P	no occupation
Wright, W. Melvin	et ux	6 G6	**970**	4	$1,600.00	P	
Carter, Andrew	et ux	6 G7	**971**	66.3	$1,500.00	P	
Christian, Daisy		6 C9	**972**	140	$1,500.00	P	
Harris, Maude E		6 E10	**973**	326	$7,500.00	C	
Harris, Maude E		6 E10	**973**	326	$7,500.00	C	
Harris, Maude E	et al	6 F9	**974**	37	$800.00	C	
Harris, Maude E	et al	6 F9	**974**	37	$800.00	C	
Houston, John H	et ux	6 F7	**975**	91.5	$2,250.00	P	
Houston, John H	et ux	6 F7	**975**	91.5	$2,250.00	P	
Carter, E. G. & Annie L.	et ux	5 G6	**976**	95.5	$3,470.00	P	
Green, Silas	est	7 J7	**978**	26	$600.00	P	In text
Purce, F. E.	et ux	7 C4	**979**	110	$1,350.00	P	not occupied
Loving, Nora E	et al	7 B2	**981**	12	$1,000.00	C	
Ware, Charles	et al	6 J2	**982**	18	$550.00	C	
Watts, Susie Garrett	et al	7 D7	**983**	3.2	$1,500.00	P	
Timmons, Warner Hair	et al	6 K3	**984**	93	$7,500.00	P	no occupation
Green, W. A.	est	6 J2	**986**	53.7	$500.00	C	no occupation
Green, Lettie	et al	6 K2	**987**	35.2	$1,600.00	C	
Powers, James T		7 D3	**988**	812.5	$31,077.00	C	
Turner, E. D.	et al	6 J3	**991**	89	$1,625.00	P	
Ferguson, Alexander	est	6 H2	**995**	48	$700.00	C	
Brooks, Richard	et ux	7 G7	**996**	25	$250.00	P	not occupied
Ferguson, Andrew	est	6 H1	**997**	36	$500.00	C	
Carter, Henry	est	7 C3	**1001**	33.5	$400.00	C	not occupied
Hall, Heirs of Lewis Note 4	amtx	6 J2	**1007**	29	$500.00	C	
Powers, Ruth R Note 4	adm rx	6 J2	**1007**	[29]	$500.00	C	
Purce, J. W.	est	4 K9	**1008**	98	$2,250.00	C	
Garnett, Rosa	et vir	7 F6	**1026**	15	$375.00	P	not occupied
Garnett, William	et ux	7 F6	**1027**	10	$950.00	P	
Hall, John H.	et ux	7 F9	**1028**	51.5	$2,300.00	P	
Jackson, Clarence	est	7 H5	**1029**	10	$300.00	C	
Morton, Thomas		7 F5	**1037**	90	$1,800.00	P	
Powers, Ruth R	adm rx	7 F9	**1042**	96.5	$1,000.00	P	
Powers, Ruth R	adm rx	7 G8	**1043**	67.8	$2,200.00	P	not occupied
Ruffin, Elizabath	et al	7 F6	**1045**	10	$200.00	P	not occupied
Upshaw, Nathanial	et ux	7 F9	**1046**	15	$775.00	P	
Young, Cosmore	et ux	7 H6	**1047**	55.5	$1,400.00	P	
Young, Fred	et ux	7 J6	**1048**	11.2	$125.00	P	not occupied
Young, James	est	7 H5	**1049**	26	$1,625.00	C	
Morton, Judson		7 H7	**1051**	1	$20.00	C	not occupied
Smith, Radford (listed as Bedford K. Smith)		7 G	**1053**	100	$1,570.00	P	
Beazley, Frank B.	et al	6 C4	**1054**	10	$375.00	C	no occupation
Dennis, Robert		7 H6	**1059**	8	$200.00	P	
Dennis, Walker	et ux	7 H6	**1060**	6	$105.00	P	not occupied
Foster, Clarence	et ux	7 F7	**1061**	19.5	$400.00	P	

Jackson, Daniel	et ux	7 H5	**1063**	10	$325.00	P	
Jackson, Mary	et al	7 F7	**1064**	24.3	$725.00	P	
Lee, Harry	et al	7 H7	**1065**	2.75	$300.00	C	
Loving, Dora (Frank)	et al	7 G10	**1067**	50	$1,035.00	P	
Morton, Maggie	et al	7 H7	**1069**	10	$130.00	P	not occupied
Saunders, Betsy	est	7 G6	**1074**	25	$812.00	C	
Ware, Robert N.	et al	7 G7	**1075**	26	$275.00	P	
Ware, Robert N.	et al	7 G7	**1076**	13.5	$560.00	P	
Ware, James H. (Willis)	et ux	7 G6	**1077**	5	$50.00	P	not occupied
Wheeler, Frank	et ux	7 H6	**1078**	16.1	$650.00	P	
Whiting, Winny	est	7 G6	**1079**	3	$50.00	C	not occupied
Whiting, Spencer	er ux	7 G6	**1080**	5	$110.00	P	
Whittaker, Mabel	et vir	7 F7	**1081**	19	$1,600.00	P	
Wright, Andrew J.	et ux	7 E7	**1082**	52	$2,700.00	P	
Whiting, David	est	7 G10	**1083**	60	$1,035.00	C	
Young, William R	et al	7 J5	**1084**	15	$475.00	P	not occupied
Garnett, Walker	et ux	7 E6	**1086**	69	$2,465.00	P	
Lee, Mary A	et vir	7 F8	**1087**	27	$400.00	P	
Lumpkin, George R	et al	7 F8	**1088**	25	$275.00	P	not occupied
Powers, Ruth R	adm rx	7 E7	**1089**	25	$275.00	P	
Vaughan, Missie Byrd	et vir	7 F6	**1095**	10	$200.00	P	not occupied
Skinker, Joseph c	est et al	2 G3	**1099**	0.5	$1.00	C	
Jeter, Bessie W.	est	1 K8	**1100**	0.03	$1,000.00	C	
Boyle, Martha	et vir	7 H10	**1110**	525	$5,422.00	P	
Lee, Emma	et al	7 J7	**1111**	6.2	$70.00	C	not occupied
Lumpkin, William (Thomas)	et ux	7 F7	**1112**	64	$2,775.00	P	
Smith, Mary C.	etal	7 H8	**1114**	205	$2,250.00	P	not occupied
Smith, Dorothy Fisher(Williams A.)		7 H4	**1115**	12	$425.00	C	not occupied
Holloway, Robert G.	est	2 B10	**1116**	0.24	$100.00	C	
Wright, Nora	et vir	7 F4	**1118**	5	$1,825.00	P	
Young, Leticia		7 H6	**1119**	37.25	$1,000.00	P	
Chinault, Bagby	et ux	7 G9	**1122**	12	$140.00	P	not occupied
Chinault, French	et ux	7 G9	**1123**	6.7	$65.00	P	not occupied
Carlton, James Elmo	et ux	7 B2	**1124**	196	$11,000.00	P	
Farmer, Ruth	et vir	7 F9	**1125**	6	$100.00	P	not occupied
Pearson, Charles	est	7 G9	**1127**	55	$1,650.00	C	not occupied
Jackson, Wade	est	7 G7	**1133**	12	$125.00	P	not occupied
Lumpkin, Isabel	et al	7 F6	**1136**	11	$140.00	P	not occupied
Chinault, H. V.	et ux	7 D7	**1138**	3	$1,500.00	P	
Morton, William H	et ux	7 F7	**1139**	23.5	$735.00	P	
Powers, Ruth R	adm rx	7 F8	**1144**	50	$1,100.00	P	not occupied
Pratt, Birdie E		4 K9	**1146**	10	$500.00	P	
Surles, John W.	et ux	4 J8	**1154**	5	$475.00	P	
Smith, Andrew Lee		4 G4	**1160**	13	$150.00	P	
Caroline Co. Sch Board,Turstees	Mexico Colored School	7 H6	**1167**	1	$1,000.00	P	

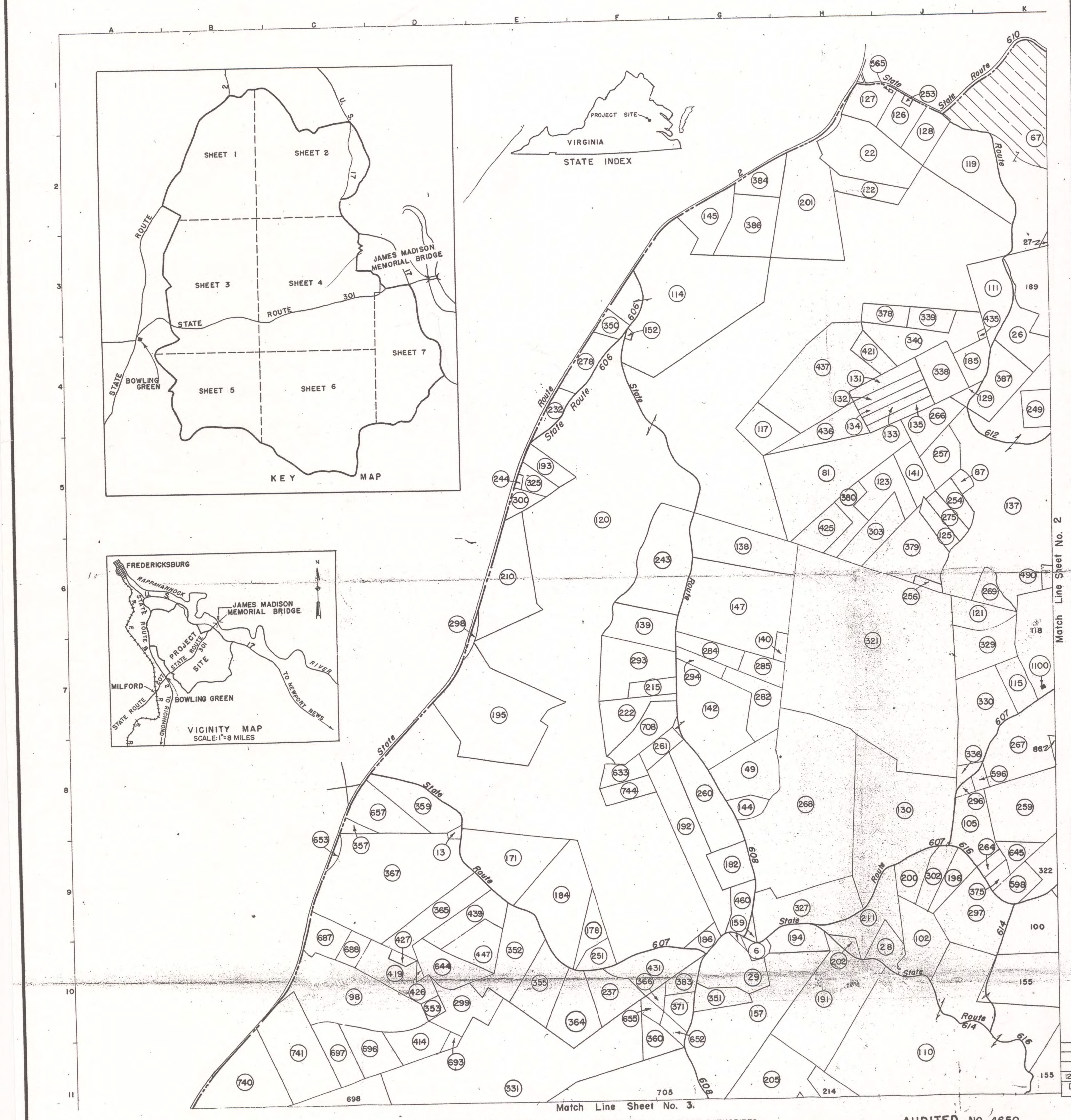
Morton, John (R.R Powers)	est	7 F5	**1168**	25	$250.00	P	not occupied
Bundy, Robert	et al	7 H7	**1172**	22	$130.00	P	
Vessels, Thomas	est	7 H6	**1173**	18.3	$200.00	C	no occupation
Askins, Harvey	et ux	6 K7	**1191**	41.00	$2,475.00	P	
Beazley, Frank B.	et ux	7 G6	**1192**	31.50	$300.00	P	
Boyle, Martha S	et vir	7 G5	**1193**	134	$1,300.00	P	
Broaddus, David	et al	7 H7	**1194**	16.5	$110.00	C	
Brown, Edward	est	7 G7	**1195**	16.7	$250.00	P	not occupied
Carter, R. C.	et ux	7 F5	**1196**	1	$20.00	P	not occupied
Farmer, Virgie R	et al	6 J7	**1198**	20	$750.00	P	no occupation
Farmer, J. Leonard		6 J7	**1199**	19	$840.00	P	
Jackson, Lawrence	est	7 J6	**1201**	10	$526.00	P	
Ware, Mary E (Willis Jackson)	et vir	7 J6	**1202**	27	$650.00	P	
Lee, Warren L.		6 J7	**1203**	50	$2,100.00	P	
Morton, Alice		7 F8	**1204**	27.8	$300.00	P	not occupied
Morton, Henry		7 G8	**1205**	30	$360.00	P	
Morton, Henry		7 H7	**1206**	8	$85.00	P	not occupied
Perry Jenette		6 H7	**1208**	26	$220.00	C	no occupation
Pitts, Arthur	et ux	7 F10	**1209**	18	$195.00	P	not occupied
Pitts, Mortimore		7 F10	**1210**	35	$440.00	P	
Pitts, Mortimore, Jr.		7 F7	**1211**	18	$634.00	P	
Rappahannock Liberty Baptist Church		7 J6	**1212**	1	$1,200.00	C	
Powers, Ruth R	adm rx	6 H4	**1213**	50	$950.00	P	no occupation
Powers, William T.	et ux	4 J5	**1214**	43.5	$625.00	P	
Powers, Ruth R	adm rx	7 H7	**1215**	5.6	$75.00	P	not occupied
Rich, William	est	7 G6	**1216**	10	$150.00	C	not occupied
Wright, James H. Sr	est	7 F6	**1217**	18	$150.00	P	not occupied
Fisher, Dorothy		7 G5	**1218**	141	$1,750.00	141	
Sydnor, Melinda	et vir	7 H5	**1219**	35.5	not listed	not listed	no occupation
Mercer, Ida Turner	et vir	7 Hh6	**1220**	5	$525.00	P	
Pitts. Robert George	et al	7 F3	**1221**	1	$150.00	P	not occupied
Whiting, Albert	est	7 G6	**1223**	4	$75.00	C	not occupied
Willis, John	est	7 J6	**1224**	5	$125.00	C	no occupation
Williams,Sarah	et vir	7 J6	**1225**	2	$40.00	P	
Williams, Sarah	et vir	7 J6	**1226**	1	$55.00	P	no occupation
Wright, James H. Sr	est	7 E7	**1227**	23.5	$500.00	P	not occupied
Young, Mary (Samuel)	et al	7 J6	**1228**	1	$20.00	P	no occupation
Young, Mary (Samuel)	et al	7 J6	**1229**	6.5	$585.00	P	not occupied
Morton, Robert W.		7 H7	**1230**	6.4	$60.00	P	
Carter, Henry	est	4 J7	**1231**	23.5	$2,000.00	C	
Jackson, Lawrence	est	7 J6	**1232**	4	$281.00	P	
Jackson, Lawrence	est el al	7 J6	**1233**	20	$700.00	C	not occupied
Bromskin, Florence		7 J6	**1236**	1.25	$20.00	P	not occupied
Garnett, Patsy	et al	7 E8	**1238**	40.8	$300.00	p	
Johnson, Sarah J.	et al	7 F11	**1239**	35	$725.00	P	

Lindsey, Walter	est	7 F11	**1240**	56.5	$1,100.00	C	
Hale, William	et al	7 F11	**1241**	33.5	$275.00	P	not occupied
Whiting, George	et ux	7 F8	**1242**	25	$500.00	P	
Wright, Gracie L	et vir	6 H5	**1243**	107	$5,250.00	P	
Collawn, M. Weston		6 G5	**1244**	77	$2,700.00	P	
Christian, Daisy		6 G6	**1245**	3	$150.00	P	
Eubank, Lou	et al	6 K3	**1246**	9	$150.00	P	no occupation
Wright, Robert L	et ux	6 J3	**1247**	92	$1,500.00	P	
Dennis, Alexander	est	6 H6	**1248**	6.5	$250.00	C	no occupation
Dennis, W. H.	est	6 H6	**1249**	8.7	$700.00	C	
Young, William P		7 J6	**1250**	15	$680.00	P	no occupation
Gouldman, A. J.	et ux	7 C1	**1255**	7	$775.00	P	not occupied
Rollins, William A.		4 K7	**1256**	86.5	$4,300.00	C	no occupation
Maddus, Hattie Rich	et vir	7 B2	**1267**	6	$300.00	P	
Upshaw, Annie E.		7 G11	**1277**	46.5	$700.00	P	not occupied
Bundy, John	et ux	7 F10	**1279**	68	$2,500.00	P	
Carter, Bertha A	et vir	6 J6	**1280**	105	$4,110.00	P	
Chinault, H. V.	et ux	7 E8	**1282**	46.5	$2,800.00	P	
Dorsey, George		7 E10	**1284**	312	$4,565.00	P	
Epps, Montague	est	6 J6	**1285**	20	$1,000.00	C	
Farmer, Thomas	et ux	7 E8	**1286**	27.5	$550.00	P	not occupied
Garnett, George W.	et ux	7 E8	**1287**	79	$1,721.00	P	
Garnett, Roger,	et vir	7 E8	**1288**	12	$1,900.00	P	
Carter, Lettie		4 J9	**1289**	74	$830.00	P	
Gravatt, Sarah H. (nee Gouldman)		7 D6	**1290**	75.75	$1,550.00	P	
Jones, Archy	et ux	4 J9	**1291**	12	$300.00	P	
Lee, Harry Jr	et ux	7 E9	**1292**	18	$265.00	P	
Powers, Charles P.	et ux	7 F3	**1294**	5	$600.00	P	not occupied
Powers, Ruth R	adm rx	7 F6	**1295**	50	$550.00	P	not occupied
Powers, Ruth R	adm rx	7 F6	**1296**	25.49	$385.00	P	not occupied
Roots, William	et ux	6 K6	**1298**	37	$500.00	P	
Whittaker, Maude	et al	7 E7	**1299**	1	$50.00	P	
Loving, J. Woodie & Mary V.		4 J11	**1300**	67.83	$2,050.00	C	
Hill, Thomas J.		4 J7	**1308**	5	$200.00	P	
Hill, Thomas J.		4 J7	**1308**	5	$200.00	P	
Farrish, Lelia John D.		7 D1	**1311**	315	$15,750.00	P	not occupied
Farmer, Arthur	et ux	7 G4	**1323**	2.6	$150.00	C	not occupied
Gray, Isabella		4 J8	**1325**	11	$350.00	C	
Gray, James H		4 K8	**1326**	6	$185.00	P	
Gray, Joseph & Isabella	est	4 J8	**1327**	16.5	$325.00	C	
Hill, Thomas J.	et ux	7 C3	**1329**	34.8	not listed	not listed	not occupied
Jeter, Howell		7 C2	**1330**	100	$1,350.00	P	not occupied
Jones, Cosmore		4 J8	**1336**	28.5	$1,100.00	P	
Burnett, W. P. & M. H.	admin	4 G9	**1339**	0.17	$1.00	C	
Powers, Charles P.	et ux	7 E1	**1346**	70.5	$4,000.00	P	
Powers, Charles P.	et al	7 C4	**1347**	66	$800.00	C	not occupied
Powers, Ruth R	adm rx	7 E2	**1349**	30	$700.00	P	

Powers, Ruth R	adm rx	7 E2	**1350**	32.5	$2,110.00	C	
Purce, F. E.	et ux	7 B3	**1353**	27	$1,475.00	P	
Purce, Florence T. (RICH)	et al	4 K8	**1354**	20.5	$1,525.00	P	
Rich, Thomas	et ux	7 D2	**1355**	97	$4,100.00	P	
Rich, Robert	est	7 B2	**1356**	56.7	$1,100.00	P	not occupied
Rollins, Sam & William	et al	4 K7	**1357**	24.7	$2,500.00	P	
Bundy, Lucy	et vir	4 J8	**1363**	8	$275.00	P	
Surles, Sarah	est	4 J8	**1367**	9	$225.00	C	
Vaughan, Ashby	et al	7 C3	**1373**	20	$900.00	P	
Powers, Ruth R	adm rx	6 J2	**1387**	23.7	$400.00	P	
Garnett, Stephen	et ux	4 K6	**1393**	133	$4,200.00	P	
Carter, R. J.		4 J6	**1395**	11	$300.00	C	
Garnett, Joe E (D.)?	et ux	4 J6	**1397**	33	$1,050.00	P	
Ferguson, Martha		6 J2	**1398**	25	$800.00	C	
McKinney, Fannie G	et vir	4 K6	**1400**	120	$4,500.00	P	no occupation
Watts, Susie Garrett		7 E7	**1422**	2.5	$1,350.00	P	
Watts, Susie Garrett		7 D7	**1423**	20	$500.00	P	not occupied
West, Edmond	est	7 J6	**1425**	19	$240.00	P	
Gaines, William	est	7 H7	**1426**	4	$1,000.00	P	not occupied
Caroline Co. Sch Board,Turstees	MT Dew	2 K8	**1427**	0.4	$550.00	P	
Mt. Dew Bapt. Ch. Trustees B		2 K8	**1428**	1	$2,000.00	P	In text
Morton, Thomas		7 F5	**1037 a**	259	$4,500.00	P	
Young, William P		7 H6	**1119-1**	15	$1,000.00	P	In text
Powers, Ruth R	adm rx	4 J8	**1351`**	28	$400.00	P	
Johnson, Dandridge	est	6 H11	**964f**	6	$1,500.00	C	no occupation

APPENDIX T

Pre-Army Historic Tract Map



187.44 AC. REPORTED EXCESS (FORM 30) TO G.S.A. 16 JAN. 1953 WHO BY LETTER DATED 18 JUNE 1953 AUTHORIZED THE DEPT. OF THE ARMY TO TRANSFER THE 187.44 AC. (WITHOUT REIMBURSEMENT) TO DEPT. OF COMMERCE BY LETTER DATED 7 AUG. 1953.

AUDITED NO. 4650

LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
D 8	359	Guy H. Sumner et ux	42.60
F 11	360	Spencer Buckner et ux	15.80
E 10	364	Maxwell Young	45.80
D 9	365	Sarah Fletcher	41.10
F 10	366	William Cooper Est.	4.80
D 9	367	Willing Bowie	186.90
F 10	371	Emma Baylor et. al.	13.70
K 9	375	John Henry Brown	6.00
J 3	378	John Arthur Lucas Est.	14.50
J 6	379	Patrick Johnson et. al.	58.00
H 5	380	Pat Johnson et ux	21.60
G 10	383	Mary Gordon Est.	15.20
G 2	384	Julian W. Garrett et ux	19.00
G 3	386	G. T. & C. L. Mullen	47.20
K 4	387	F. W. Denson Est.	40.00
D 11	414	Sarah Fletcher et al	25.00
D 10	419	Arthur Jackson et.ux.	36.00
H 4	421	Charles H. Lucas Est.	14.50
H 6	425	James Edward White	23.30
D 10	426	Richard Herring	2.00
D 10	427	Lee Jackson et ux	3.00
F 10	431	Joseph Ferguson Est.	42.90
K 4	435	Eugene Pendleton et al	0.80
H 5	436	Charles P. Powers et ux	30.50
H 4	437	Ruth R. Powers, Admrx.	109.20
D 9	439	Mary N. Sale et vir	29.40
E 10	447	Mary N. Sale	27.90
G 9	460	F. E. Bowie	15.60
K 6	490	Nathan Minor	6.40
J 8	596	Peter Smith	4.80
K 9	598	Victoria Ellis	16.80
F 8	633	Ruth R. Powers, Admrx.	13.90
D 10	644	Edmund S. Carneal et ux	30.40
K 9	645	Mary E. Jones	14.00
F 11	652	Frances Taylor Estate	6.60
C 9	653	Charley Harris	0.40
F 10	655	Rosa E. Buckner et vir	6.60
D 8	657	Charles H. Beverly et ux	34.80
C 10	687	Ruth R. Powers Admrx.	21.20
C 10	688	Willie Lee Norman Sr. et al	10.50
D 11	693	Lawrence Gilmore Estate	2.00
C 11	696	Ruth R Powers Admrx et al	28.80
C 11	697	Ruth R. Powers Admrx	27.80
F 8	708	Lawrence W. Baylor et ux.	29.50
B 11	740	Stefan Nodzak Est.	87.80
C 11	741	John Koday et ux	78.70
F 8	744	Ruth C. Bowie	15.50
J 1	565	Frank P. Farmer et ux	0.01
K 8	1100	Bessie W. Jeter Est.	0.03

LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
G 10	6	Trustees of Caroline Co. School Bd.	7.20
D 9	13	Trustees of Caroline Co. Sch. Bd.	1.50
H 2	22	Ashton Durrett Et. Ux.	72.40
K 4	26	Thomas H. Blanton et ux	34.80
J 10	28	William Smith Estate	18.00
G 10	29	Bessie May Kay	42.60
G 8	49	John R. Baylor Est.	51.20
K 2	67	Lizzie G. Dillard	260.00
H 5	81	Ruth R. Powers, Admrx.	122.00
J 5	87	John A. Street	5.20
C 10	98	Federal Land Bank of Baltimore	110.90
J 10	102	Allen Flood	43.60
J 9	105	J. Henry Brown	36.50
J 10	110	Charles M. Thomas et ux	621.00
K 3	111	W. P. Waite	41.00
G 3	114	James B. Flippo et ux	224.00
K 7	115	Ruth R. Powers, Admrx.	20.00
G 5	117	Joseph Ferguson Est.	27.20
J 2	119	Sallie B. Jones	72.20
F 5	120	Sophia C. Bowie et al	1765.40
J 6	121	Nelson Smith et ux	22.80
H 2	122	Robert E. Skinner	22.00
J 5	123	Henry Smith et al	34.00
J 6	125	Nelson Smith et ux	11.30
J 1	126	Jesse Gordon	21.00
H 1	127	John Gordon et ux	23.40
J 2	128	Innes Gordon	22.20
J 4	129	James Edward Taylor	5.00
J 8	130	Robert H. Puller et al	168.00
J 4	131	E. B. Pendleton Est.	14.40
J 4	132	Robert H. Tate et al	10.20
J 4	133	Patsie Street	10.40
J 4	134	Julia Robertson	10.10
J 4	135	Nancy Taylor	10.00
K 5	137	Edgar M. Young	408.00
G 6	138	Joseph J. Stefaniga et ux	65.60
F 7	139	Ann Stefaniga Druiett et al	35.00
H 7	140	Victoria Frye Ellis et al	4.80
J 5	141	John L. Minor et ux	20.40
G 7	142	Eugene B. Ellis et al	90.40
G 8	144	Arthur L. Howard et ux	11.20
G 2	145	Belle B. Smith et al	32.30
G 6	147	Joseph Gracik et ux	136.00
F 4	152	Dal Morris Est.	0.80
G 10	157	Walter Boyd Wright et ux	128.80
G 10	159	Haley H. Taylor et ux	4.40
E 9	171	William A. Taylor et al	77.00
F 10	178	Susan Waugh Est.	16.40
G 9	182	Wm. H. Brown et ux	24.00
E 9	184	Kate W. Pugh, Est.	80.00
J 4	185	Emma Street Ferguson et vir	16.50
G 10	186	Mrs. R. J. Thomas	6.50
H 10	191	John Mathew Martian et al	113.70
G 9	192	Walter N. Bowie et ux	74.40
E 5	193	William Hill et ux	14.40
H 10	194	Willing Bowie	21.20
E 7	195	Stefan Treblik et al	133.50
J 9	196	Mollie Scott et vir	17.00
J 9	200	John L. Bullock et ux	20.80
H 2	201	Silas J. Sale et ux	102.00
H 10	202	Trustees of Liberty Church	5.50
G 11	205	Richard C. Buckner	94.80
E 6	210	Allie G. Thomas et ux	74.10
H 9	211	Thomas G. Kay	39.60
F 7	215	Emma Turner	12.00
F 7	222	Eugene Scott, et al	30.00
E 4	232	Frances Sale Klock	12.50
F 10	237	Mattie G. Ferguson	31.20
F 6	243	John Bettick et ux	85.60
E 5	244	Aubrey Hill et ux	1.10
K 4	249	W. H. Morton Est.	22.00
F 10	251	Laura Lomax King et al	12.40
J 1	253	John Innis & Jesse Gordon	1.00
J 5	254	Robert Street Est.	12.00
J 6	256	Julia Johnson Est.	3.00
J 5	257	Arthur Rudd et ux	25.40
K 8	259	William Jones Est.	70.60
G 8	260	Frank E. Bowie et ux	56.70
F 8	261	Rachel Richardson Seal et al	12.30
K 9	264	Robert Jones et ux	6.00
J 4	266	Hiter Jackson	26.80
K 8	267	Wm. H. Vaughan et ux	91.60
H 8	268	Wm. H. Vaughan et ux	242.40
K 6	269	Wm. B. Edwards et ux	13.30
J 5	275	Washington Street Est.	11.20
F 4	278	James M. Skinner et ux	25.00
G 7	282	George Lomax Est.	33.20
G 7	284	Martha Jackson Est.	19.20
G 7	285	Martha Brown et al	16.20
F 7	293	John A. Reynolds Est.	54.00
G 7	294	Amy L. Jordan	10.00
J 8	296	Ardell Brown et vir	4.00
J 9	297	Annie L. Bullock	59.80
D 7	298	W. B. Thomas et ux	4.30
D 10	299	John W. Norman et ux	36.00
E 5	300	William Beverly Est.	8.80
J 9	302	Samuel Norman	16.80
H 6	303	James & Anthony Winston	33.00
H 7	321	Ada M. Evans	468.80
E 5	325	Samuel Hill Est.	10.50
H 9	327	Mrs. Eugene Bowie	67.00
K 7	329	Wm. H. Vaughan et ux	41.20
K 7	330	Frank E. Bowie et ux	62.40
E 11	331	Willing Bowie	293.20
J 8	336	Luberty Jones et vir	4.80
J 4	338	Willis & Nancy Taylor Est.	30.60
J 3	339	Warren W. Lee et ux	16.00
J 4	340	John R. Travis et al	49.00
F 4	350	Randolph F. Parks et al	9.60
G 10	351	William Gordon	16.00
E 10	352	B. H. Childs	54.80
D 10	353	B. N. Childs	6.00
E 10	355	W. B. Childs	45.20
C 9	357	Frank B. Beazley et ux	4.70

NOTE: 1A & 1B
DIRECTIVE NO. 1 COVERS ALL TRACTS EXCEPT (4) TR. 1339, (5) TR. 1429L, (6) 1430L, AND (7) TR. 1431L. (8) TR. 1432L

RE CODE	ACQUISITION AUTHORIZATION	
(1B)	RE-D 494	22 DEC. 1941
(2)	RE-D 6154	9 MARCH 1955
(3)	RE-D 6154A (CANCELS RE-D 6154)	16 DEC. 1955
(4)	2ND. IND. OCE	10 NOV. 1959
(5)	DEL. AUTH.	25 JUNE 1958
(6)	DEL. AUTH.	2 OCT. 1959
(7)	DEL. AUTH.	8 NOV. 1961
(8)	LETTER, HDQRS, 2ND U.S. ARMY TO N.D. DTD 10 AUG. 1962.	
(1)	4TH. IND. ASW TO QG	12 APRIL 1941
(1A)	RE-D 296	9 AUG 1941

NOTE:
Cemeteries are Indicated Thus ■

DATE	REVISIONS	BY
12-1-75	NAME CHANGED FROM CAMP, BY G.O. 45	RWH

*Now Under Jurisdiction Of Norfolk District.
RETURNED TO BALTO. DIST. 7-1-70
" TO NORFOLK DIST. 12-1-75

FINAL PROJECT OWNERSHIP
(TYPE OF MAP)

STATE VIRGINIA
COUNTY CAROLINE
DIVISION NORTH ATLANTIC
DISTRICT *BALTIMORE
ARMY AREA FIRST
USING AGENCY DEPT OF THE ARMY
20 MILES S E OF FREDERICKSBURG
1 MILE E OF BOWLING GREEN

TRANSPORTATION FACILITIES

RAILROAD R. F. & P. RR.
STATE ROAD 2, 207 & 301
FEDERAL ROAD 17
AIRLINE

LAND AREA

ACRES OWNED BY W.D.	77,326.65
ACRES FEE	77,215.26
ACRES LEASED FROM W.D.	
ACRES TRANSFERRED TO W.D.	
ACRES LESSER INTS.-(4 LIC.)	111.39

DISPOSALS — 187.44

ACRES SOLD	
ACRES TRANSFERRED	
ACRES EXCHANGED	
ACRES OTHERWISE TO G.S.A.	187.44

LEGEND

RESERVATION LINE
STATE OR PROVINCE LINE
COUNTY LINE
CIVIL DISTRICT PRECINCT
LAND-GRANT LINE
CITY, VILLAGE, OR BOROUGH
CEMETERY, SMALL PARK, ETC.
TOWNSHIP LINE
SECTION LINE

Scale
SCALE: 1"=1/4 MILE
1/4 1/8 0 1/4 1/2 3/4 1

WAR DEPARTMENT, O.C.E.
CONSTRUCTION DIVISION

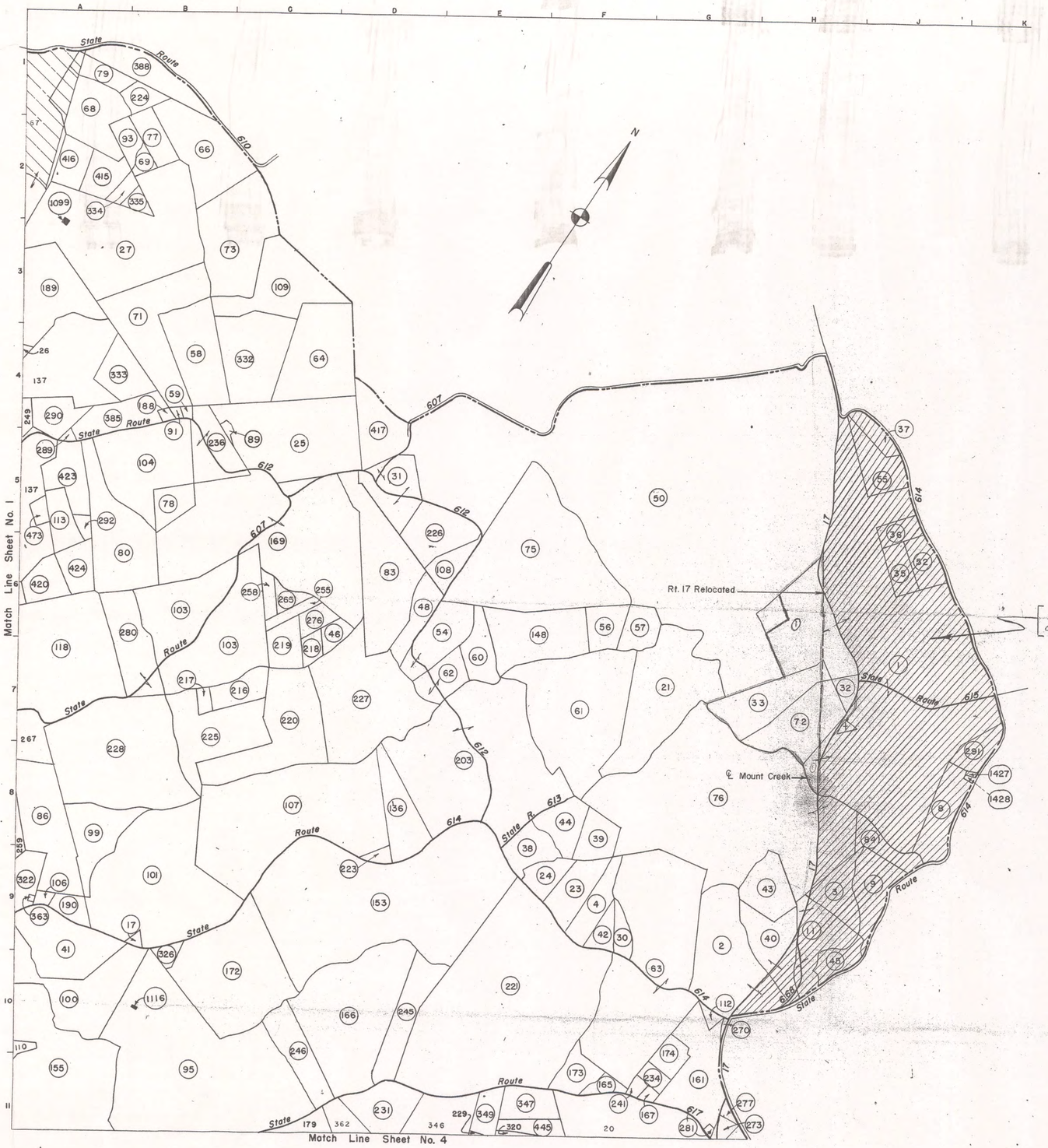
REAL ESTATE
FORT A. P. HILL
MILITARY RESERVATION

RECOMMENDED: John W. Powell, ASSOCIATE ENGINEER DATE 12 Oct. 1945
APPROVED: [signature] LT. COL., CORPS OF ENGINEERS DATE 16 Oct. 1945

COMPILED: C.E.G. TRACED: C.E.G. CHECKED:

DATE	BY	REVISIONS	APPROVED
21 FEB. [illegible]	CEG	CHANGED TOTAL AREA	J. W. Powell
11 APR. '55	K.V.M.	TRACT LOCATIONS ADDED.	
28 AUG. 58	S.S.W.	ADDED AREA TR. 1429L.	
12 DEC. '61	Y.P.P.	DIST. DESIGNATION CHANGED FROM WASH. TO BALTIMORE	
18 DEC. '62	F.P.W.	DUE TO FINAL AUDIT.	

SHEETS: 1 OF 8 DRAWING NO. M.A.D. 15
CR Form 477A



LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
C 6	276	C. P Powers	12.40
G 11	277	C. C. Stevens	2.00
B 6	280	Robert Coleman et al	57.00
G 11	281	Matilda Rollins Washington et al	1.60
A 5	289	McKensey Dandridge Est.	2.50
A 4	290	J. Tally Hailstock	22.00
K 8	291	Mary Jane Ownes et vir	14.00
A 5	292	McKensey Dandridge Est.	5.00
A 9	322	Wm. S. Jackson Est. et al	38.30
B 10	326	Trustees Betheseda Church	8.80
C 4	332	Ruth R. Powers Admrx	82.00
A 4	333	Ruth R. Powers Admrx	32.40
A 2	334	John Massie Est.	7.20
B 2	335	John Massie Est.	7.20
E 11	347	Millie Rollins	19.00
E 11	349	John R. Travis et al	17.20
A 9	363	Mica Council Lodge No. 1057	0.50
A 4	385	Melvina Morton	40.00
B 1	388	Robert V. Gordon Est.	42.50
A 2	415	Rueben Shelton	22.40
A 2	416	Mary G. Carter Est.	22.00
D 5	417	Theodore V. Houser et al	45.60
A 6	420	Peter Lewis Est.	23.20
A 5	423	John Redd Est.	34.40
A 6	424	Ella D. Roane et al	23.00
F 11	445	Annie Stovall	14.80
A 5	473	Willie L. Jones	5.30
K 8	1427	Trustees of Caroline County School Board	0.40
K 8	1428	Trustees of Mt. Dew Baptist Church	1.00
A 3	1099	Joseph Skinner Est. et al	0.50
B 10	1116	Robert G. Holloway Est.	.24

LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
J 7	1	W. E. Skinker et al	687.00
G 9	2	Laura Kay et al	107.20
H 9	3	William E. Skinker et ux	27.65
F 9	4	Ruth R. Powers	28.00
J 8	8	Mary Alma F. Owens et al	36.00
J 9	9	Rosa Lee Woodfork et vir	34.00
H 9	11	Ruth R. Powers, Admrx.	43.40
B 9	17	Trustees of Caroline Co. School Bd.	2.50
G 7	21	G. L. Broaddus et al	120.00
F 9	23	Tie Kay	31.00
F 9	24	Richard A. Christian et ux	18.00
C 5	25	Robert Durrett et ux	151.20
A 3	27	J. M. Heflin, ut ux (0.50 AC. IN TR. 1099)	220.50
F 9	30	Eliza Johnson	11.00
D 5	31	John Lomax & Jennie Jackson Est.	43.00
H 7	32	J. T. Holloway et al	8.00
H 7	33	John T. Holloway, et ux	54.00
J 6	35	Allen Gray	18.00
J 6	36	Robert Cole et ux	14.00
J 5	37	Lucy M. Skinker et al	13.00
E 8	38	William Woolfolk	24.00
F 8	39	Washington Jackson	25.00
H 9	40	Phil Kay, Sr.	44.76
A 10	41	Frank E. Bowie et. ux	73.00
F 9	42	Charles R Powers	12.00
H 9	43	Ruth R. Powers, Admrx.	35.00
F 8	44	Linsey Holms Est.	28.00
H 10	45	Mamie S. Kay et vir	16.00
D 6	46	William Lomax	8.80
D 6	48	Winnie Baylor Est.	22.80
G 5	50	Kate D. Waller et al	1015.00
J 6	52	Isaiah Chambers et ux	15.00
E 6	54	William Banks	39.25
J 5	55	Washington Harrison Est	34.50
F 6	56	Lucy Baker Est.	24.00
F 6	57	Harry (Henry) Baker	23.00
B 4	58	Philip Baylor	68.00
B 4	59	Philip Baylor	2.20
E 7	60	Louisa Lee	30.00
F 7	61	Edmonia P. Toombs	156.00
E 7	62	Edward Walter Toombs et ux	25.20
G 10	63	J. H. Gouldin et ux	259.00
C 4	64	Rebecca Massie Samuels. et al	97.00
B 2	66	W. B. Brown	82.00
A 1	68	Robert Eubank et ux	60.00
B 2	69	Sarah Porter	5.60
B 3	71	Alice T. Gordon	108.00
H 7	72	Frances Ford Holloway	58.00
B 3	73	Warner Brown et al	103.60
E 6	75	Helen C. Johnson et vir	210.00
G 8	76	Nannie H. Gouldin, et al	400.00
B 2	77	French C. Newton et al	21.20
B 5	78	Willie Lucas et ux	19.70
A 1	79	Eugene B. Jones Est.	17.40
B 6	80	Chastine W. Colbert et ux	90.40
D 6	83	Ruth R. Powers Admrx et al	106.80
J 8	84	Land Abstract & Title Co.	34.00
A 8	86	Grace L. Bullock, et al	67.60
D 4	88	~~Frank W. Taylor et ux~~	~~2.40~~
B 4	91	William Baylor Est.	2.20
A 2	93	Oliver C. Gray	14.80
B 11	95	Ida L. Bullock	362.56
A 8	99	Robert A. Bullock, Sr, et ux	50.00
A 10	100	Robert A. Bullock, Sr. et ux	129.00
B 9	101	Edwin L. Bullock et al	210.50
B 6	103	Ada M. Evans et al	189.50
B 5	104	James H. Holloway et ux	104.00
A 9	106	Trustees, Bethlehem Church	3.00
C 8	107	Cora L. Greenstreet et al	248.80
E 6	108	John Ferguson et ux	18.80
C 3	109	Andrew Moore Brown	77.60
G 10	112	Ruth R. Powers, Admrx.	4.00
A 5	113	William Clark	22.40
A 7	118	Leslie Kocsis et ux	213.37
D 8	136	Melinda Taliaferro	43.20
E 6	148	Mrs Ben M. Skinker et al	77.00
D 9	153	Ada M. Evans	393.60
A 11	155	John R. Travis et al	263.00
G 11	161	John L. Motley, et ux	72.20
F 11	165	Wm. & Buckner Washington	6.40
D 10	166	William H. Vaughan et al	174.80
G 11	167	Nellie Coleman	4.40
C 6	169	R. Isaac Raines et ux	281.20
C 10	172	Wm. E. Skinker et ux	156.20
F 11	173	Fayette Grymes	18.60
G 10	174	Spencer Goodloe	15.20
B 4	188	Silas J. Sale et al	2.40
A 3	189	F. W. Denson Est.	114.80
A 9	190	Herbert Jones et ux	10.10
E 8	203	Silas J. Sale et ux	256.00
C 7	216	Lillian A. Smith	23.20
B 7	217	M. Ella Smith	5.40
C 7	218	Matilda Jackson Est.	10.00
C 7	219	Louisa Mudd Est.	22.40
C 7	220	James Rueben Jackson Est.	106.40
E 10	221	Gouldin L. Broaddus et ux	422.40
D 9	223	Walter Pollard et ux	6.80
B 1	224	Fannie A. Parks	13.60
B 7	225	Catherine Coleman et al	82.00
D 5	226	Ray Robinson	48.80
D 7	227	Alvin T. Rowe et ux	146.40
A 8	228	Robert J. Wright et ux	190.40
D 11	231	D. C. Smith	44.10
G 11	234	Maria Jackson Est.	8.80
B 5	236	Wm. Jackson Est.	41.20
F 11	241	Annie Stovall	6.00
D 10	245	Maude E. Harris	46.00
C 10	246	Maude E. Harris	43.60
C 6	255	Albert Lomax	8.40
C 6	258	Ruth R. Powers, Admrx.	8.80
C 6	265	Francis Lucas et vir	10.40
G 10	270	Gouldin L. Broaddus et ux	0.32
G 11	273	Frank Matthews et ux	6.80

[illegible] Remarked excess to G.S.A. on 9 Nov. 1973. (933.90 dc actual)

NOTE:
Cemeteries are indicated Thus ■

*Now Under Jurisdiction Of Norfolk District.
RETURNED TO BALTO. DIST. 7-1-70
" NORFOLK DIST. 12-1-75

AUDITED NO. 4650

FINAL PROJECT OWNERSHIP
(TYPE OF MAP)

STATE VIRGINIA
COUNTY CAROLINE
DIVISION NORTH ATLANTIC
DISTRICT *BALTIMORE
ARMY AREA FIRST
USING AGENCY DEPT OF THE ARMY
20 MILES S E OF FREDERICKSBURG
1 MILE E OF BOWLING GREEN

TRANSPORTATION FACILITIES

RAILROAD R.F.&P.
STATE ROAD 2, 207 & 301
FEDERAL ROAD 17

LAND AREA

ACRES OWNED BY W.D.
ACRES LEASED BY W.D. SEE
ACRES LEASED FROM W.D. SHEET #1
ACRES TRANSFERRED TO W.D.
ACRES DONATED TO W.D.

DISPOSALS

ACRES SOLD
ACRES TRANSFERRED
ACRES EXCHANGED
ACRES OTHERWISE

LEGEND

RESERVATION LINE
STATE OR PROVINCE LINE
COUNTY LINE
CIVIL DISTRICT PRECINCT
LAND-GRANT LINE
CITY, VILLAGE, OR BOROUGH
CEMETERY, SMALL PARK, ETC.
TOWNSHIP LINE
SECTION LINE

Scale

SCALE: 1" = 1/4 MILE

1/4 1/8 0 1/4 1/2 3/4 1

WAR DEPARTMENT, O.C.E.
CONSTRUCTION DIVISION

REAL ESTATE
FORT A.P. HILL

MILITARY RESERVATION

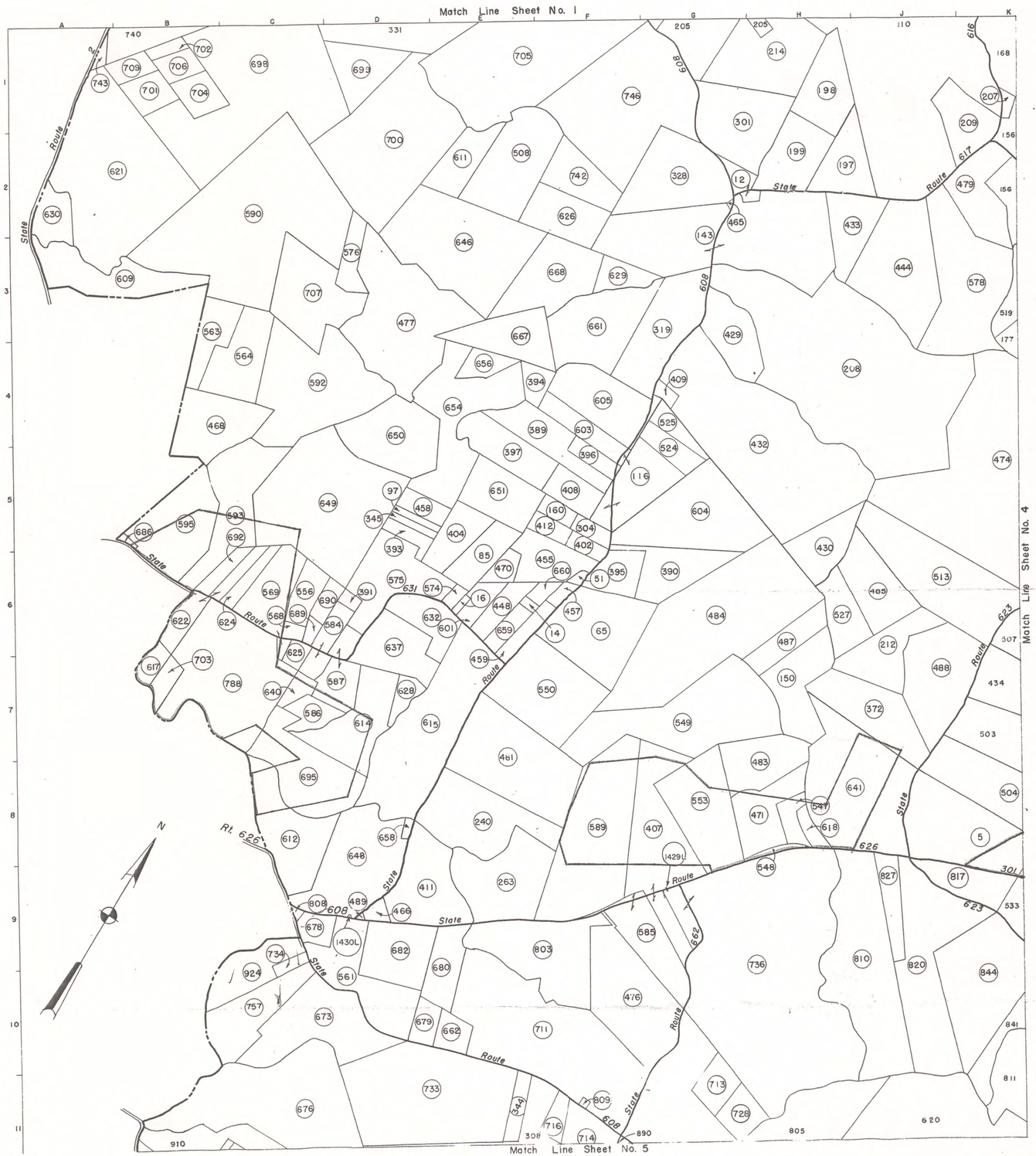
RECOMMENDED: John W. Powell, ASSOCIATE ENGINEER DATE 12 Oct. 1945
APPROVED: [signature], LT. COL., CORPS OF ENGINEERS DATE 16 Oct. 1945

COMPILED: C.E.G. TRACED: C.E.G. CHECKED:

DATE	BY	REVISIONS	APPROVED
1-19-77	SMW	RELOCATION OF ROUTE 17	
1-29-75	RWH	CHANGED NAME FROM CAMP, BY G.O. 45.	
18 DEC. '62	F.P.W	DUE TO FINAL AUDIT.	
18 DEC. 61	F.P.P	DIST. DESIGNATION CHANGED FROM WASH. TO BALTIMORE.	
11 APR. '55	K.J.M.	TRACT LOCATIONS ADDED.	

SHEETS: 2 OF 8 DRAWING NO. M. A. D. 15

"IMPERIAL" TRACING CLOTH K & E CO., N.Y.



LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
C 6	624	Cora Johnson et vir	14.50
C 7	625	Eugene Johnson et al	8.60
F 2	626	Jacob Jackson	51.00
D 7	628	Josephine Lewis Holms Est.	13.10
F 3	629	Elwood Loving	20.80
A 2	630	Nick Minarchi	24.00
D 6	632	Ruth R. Powers et al	36.40
D 6	637	Ethel H. Snell et vir	56.00
C 7	640	Eugenia Upshaw	10.00
H 8	641	James R. Fortune et al	171.00
E 3	646	L. T. Kay, et al	175.20
D 8	648	Kate G. Wright et al	113.00
C 5	649	Mamie T. Snell et al	202.00
D 4	650	Ross J. Loving et ux	84.50
E 5	651	Garnett G. Sutton	54.80
E 4	654	Gus D. Frye et ux	116.40
E 4	656	Homer Bruce et al	16.30
D 8	658	Melvin Baylor et ux	1.10
E 6	659	Lawrence W. Baylor et ux	13.20
F 6	660	Lawrence W. Baylor et ux	6.80
F 3	661	Ruth R. Powers, Admrx., et al	91.10
E 10	662	Zoetilla G. Elliott	18.00
E 4	667	W. L. Brooks et al	58.40
F 3	668	Ruth R. Powers, Admrx. et al	78.00
C 10	673	Alice M. Broaddus	91.50
C 11	676	J. W. Elliott	213.80
C 9	678	Waverly C. Elliott	15.20
D 10	679	Waverly C. Elliott	18.70
E 9	680	Jennie Farmer	36.50
D 9	682	Eddie L. Garrett	5.80
B 5	686	Phil U. Reynolds et ux	1.50
C 6	689	Mathew Myers	6.50
C 6	690	Heirs of Martin Myers, et ux	11.90
C 6	692	Mary Lomax Spear	12.70
C 8	695	Ruth R. Powers, Admrx., et al	94.80
C 1	698	Edward G. Thornton et al	294.60
D 1	699	Edward G. Thornton et al	44.60
D 2	700	J. O. & William G. Turpin	203.20
B 1	701	Littleton Norman Est.	21.90
B 1	702	Eliza Norman	5.20
B 7	703	John Jopher et ux	12.40
B 1	704	Mary L. Buckner	20.00
E 1	705	C. A. & R. L. Brooks Est.	270.40
B 1	706	Fannie E. Norman Beverly Black	15.00
C 3	707	Ruth R. Powers, Admrx et al	88.80
B 1	709	Frank C. Norman et ux	14.30
E 10	711	James Pelham Broaddus et al	385.50
G 11	713	Arthur Lee Chinault et ux	24.00
F 11	714	Arthur Lee Chinault et ux	34.50
F 11	716	James Evans et ux	10.00
G 11	728	Jack Myers et ux	24.00
D 11	733	Wilber Evans Sale et al	219.00
C 9	734	Harry D Sheppard et al	5.00
H 10	736	Maude B. Travis	510.50
F 2	742	Jacob N. Jackson et al	49.00
A 1	743	R. Lewis Brooks, Jr., Est.	3.10
~~F 1~~	~~746~~	~~Willing Bowie, et al~~	~~209.20~~
C 10	757	W. Russell Broaddus et al	65.50
C 7	788	W. Russell Broaddus et al	165.00
F 9	803	Ruth R. Powers, Admrx.	101.40
C 9	808	William L. Elliott et al	2.40
F 11	809	Caroline Farmers Cooperative, Inc.	1.00
J 10	810	G. R. Dorsey	190.80
K 9	817	Joseph Ayers et ux	40.00
J 10	820	Larry C. Garnett et ux	150.00
J 9	827	Ruth R. Powers, Admrx.	26.00
K 10	844	Alvin B. Hicks et ux	142.00
C 10	924	Florence Sheppard	45.00
J 7	372	Ruth R. Powers, Admrx.	80.00

Loc. No.	Tr. No.	VENDOR	Less. Int.
G 8	1429L	Commonwealth of Virginia	0.03
D 9	1430L	Commonwealth of Virginia	0.03

NOTE:
Cemeteries are Indicated Thus ■

*Now Under Jurisdiction Of Norfolk District.
RETURNED TO BALTO. DIST. 7-1-70
" " NORFOLK DIST. 12-1-73

AUDITED NO. 4650

LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
K 8	5	Luther T. Kay, Jr. et ux	124.00
J 2	12	Caroline Co. Co-op Sweet Potato Assoc. Inc.	17.00
E 6	14	Trustees of Caroline Co. School Bd.	2.00
E 6	16	Lucy Smith Garnett et vir	17.30
F 6	51	Lucy Smith Garnett et vir	3.00
F 6	65	Russell G. Acors et ux	101.40
E 6	85	John W. Baylor et ux	33.20
D 5	97	Malinda Lee	5.00
F 5	116	Ruth R. Powers, Admrx.	55.20
G 3	143	Jennifer R. Brooks et ux	230.30
H 7	150	Mary A. Baylor et al	68.40
F 5	160	Eugene Baylor et ux	11.60
H 2	197	Robert W. Collawn	47.20
H 1	198	Robert W. Collawn et al	54.00
H 2	199	Mary V. Collawn	56.00
K 1	207	Travis Cosby	4.40
H 4	208	Thomas G. Kay	429.00
K 1	209	Susie M. Keyser et vir	48.80
J 7	212	Thomas G. Kay	56.40
H 1	214	James G. Marshall	105.80
E 8	240	Richard T. Jones et ux	102.30
E 9	263	Percy C. Bruce et ux	98.00
G 1	301	William Irvin Jones et al	86.40
F 5	304	John W. Baylor et ux	10.80
G 3	319	Lizzie J. Shackleford et vir	92.20
G 2	328	Richard T. Jones	98.40
E 11	344	Florence Armstead et al	15.80
D 5	345	Julia Lonesome	5.00
E 4	389	Arthur W. Baylor et ux	50.00
G 6	390	Arthur W. Baylor et ux	53.20
D 6	391	Clarence L. Baylor	5.20
D 5	393	Eugene Baylor et ux	10.00
E 4	394	Eugene Baylor et ux	14.00
F 6	395	Eugene Baylor et ux	29.00
F 5	396	Fird W. Baylor et al	13.60
E 5	397	Frank F. Baylor et ux	53.60
F 6	402	Lawrence W. Baylor et ux	9.70
E 5	404	Lawrence W. Baylor et ux	35.50
G 8	407	Seddon J. Bruce et ux	12.90
F 5	408	Richard L. Beale Est.	26.80
G 4	409	Carrie Fry	4.80
D 9	411	John M. Garrett et ux	85.00
F 5	412	Lucy Smith Garnett et vir	10.60
G 4	429	Richard T. Jones et ux	48.20
H 6	430	Luther T. Kay Jr. et ux	45.60
H 5	432	Luther T. Kay et ux	297.20
J 2	433	Harry T. Kidd et ux	49.70
J 3	444	Mrs. Bellfield Cave Shackleford et al	123.00
F 6	448	John W. Baylor et ux	20.90
F 6	455	Annie Bell Baylor	40.80
F 6	457	Mary Baylor Fitzgerald et vir	6.50
D 5	458	Eugene Baylor et ux	15.00
E 6	459	Eugene Baylor et ux	15.30
G 2	465	Waring Derieux et ux	1.00
D 9	466	Mrs. Loetilla Elliott	8.41
~~G 4~~	~~468~~	~~Elnard H. Edwards~~	~~7.00~~
E 6	470	Jannie Greene et vir	12.00
H 8	471	Ephraim L. Hardman et al	51.60
K 5	474	Thomas G. Kay et al	465.00
F 10	476	Warren B. Bruce	113.50
D 3	477	George R. Farmer et al	171.20
K 2	479	Susie M. Keyser et vir	55.80
E 8	481	Mary Lou Garrett et al	139.80
H 8	483	Ada M. Evans	56.00
G 6	484	Ada M. Evans	253.20
J 6	485	Ruth R. Powers, Admrx. et al	64.60
H 6	487	Roland Richards et ux	32.70
J 7	488	John W. Smith et ux	105.20
D 9	489	Loetilla G. Elliott	0.50
K 8	504	W. B. & Etta H. Bruce	116.20
E 2	508	Luther T. Kay et ux	88.10
J 6	513	Maurice B. Kay	147.80
G 5	524	Mildred L. Jones et al	21.40
G 4	525	Annie E. Frye et vir	16.70
H 6	527	Ruth R. Powers, Admrx.	40.00
H 8	547	Ephraim L. Hardman et al	1.430
H 8	548	Ephraim L. Hardman et al	4.40
G 7	549	Montgomery G. Garrett Est.	165.00
F 7	550	Mary E. Acors et al	109.80
G 8	553	Mary S Lewis et al	91.20
C 6	556	Beulah Baylor	23.20
D 10	561	Percy C. Bruce	85.50
B 3	563	Carl A. Edwards et ux	35.20
C 4	564	Mack L. Edwards	62.80
C 6	568	Eugene Johnson et al	5.10
C 6	569	Garfield Johnson et ux	56.20
E 6	574	Mary Monroe	4.90
D 6	575	John T. Pendleton	79.20
D 3	576	Philip U. Reynolds	21.40
K 3	578	Floyd S. Smith et ux	139.00
D 6	584	Lafayette Upshaw	19.50
G 9	585	Spurgeon C. Bruce et ux	57.20
C 7	586	Lafayette Upshaw et al	20.80
D 7	587	Richard V. Upshaw et ux	36.00
F 8	589	Warren B. Bruce et ux	167.70
C 2	590	John Q. Adams et ux	323.80
C 4	592	Julian Loving Est.	155.60
C 5	593	Philip U. Reynolds et ux	92.30
B 5	595	Joseph Spencer Ruffin et ux	91.20
E 6	601	James E. Garnett et ux	1.70
F 4	603	Richard L. Beale Estate	29.50
G 5	604	Wilcie C. Baylor et ux	124.20
F 4	605	Wilcie C. Baylor et ux	68.80
B 3	609	Gatchell Corbin et al	81.20
E 2	611	J. Q. Adams et al	42.30
C 8	612	Lizzie C. Beazlie	90.80
D 7	614	C. A. & W. R. Broaddus	70.40
D 7	615	Ellis M. Brooks Estate	176.00
B 7	617	Ida Frye et vir	12.80
H 8	618	James R. Fortune et ux	10.10
B 2	621	James D.C. Goldin Jr. et al	238.80
B 6	622	Samuel Hicks	34.40

FINAL PROJECT OWNERSHIP
(TYPE OF MAP)

STATE: VIRGINIA
COUNTY: CAROLINE
DIVISION: NORTH ATLANTIC
DISTRICT: *BALTIMORE
ARMY AREA: FIRST
USING AGENCY: DEPT OF THE ARMY
20 MILES SE OF FREDERICKSBURG
1 MILE E OF BOWLING GREEN

TRANSPORTATION FACILITIES

RAILROAD: R.F.&P. RR.
STATE ROAD: 2, 207, 301
FEDERAL ROAD: 17
AIRLINE:

LAND AREA

ACRES OWNED BY W.D.:
ACRES LEASED BY W.D.: SEE SHEET #1
ACRES LEASED FROM W.D.:
ACRES TRANSFERRED TO W.D.:
ACRES DONATED TO W.D.:

DISPOSALS

ACRES SOLD:
ACRES TRANSFERRED:
ACRES EXCHANGED:
ACRES OTHERWISE:

LEGEND

RESERVATION LINE
STATE OR PROVINCE LINE
COUNTY LINE
CIVIL DISTRICT PRECINCT
LAND-GRANT LINE
CITY, VILLAGE, OR BOROUGH
CEMETERY, SMALL PARK, ETC.
TOWNSHIP LINE
SECTION LINE

Scale

SCALE: 1" = 1/4 MILE
1/4 1/8 0 1/4 1/2 3/4

WAR DEPARTMENT, O.C.E.
CONSTRUCTION DIVISION

REAL ESTATE
FORT A. P. HILL
MILITARY RESERVATION

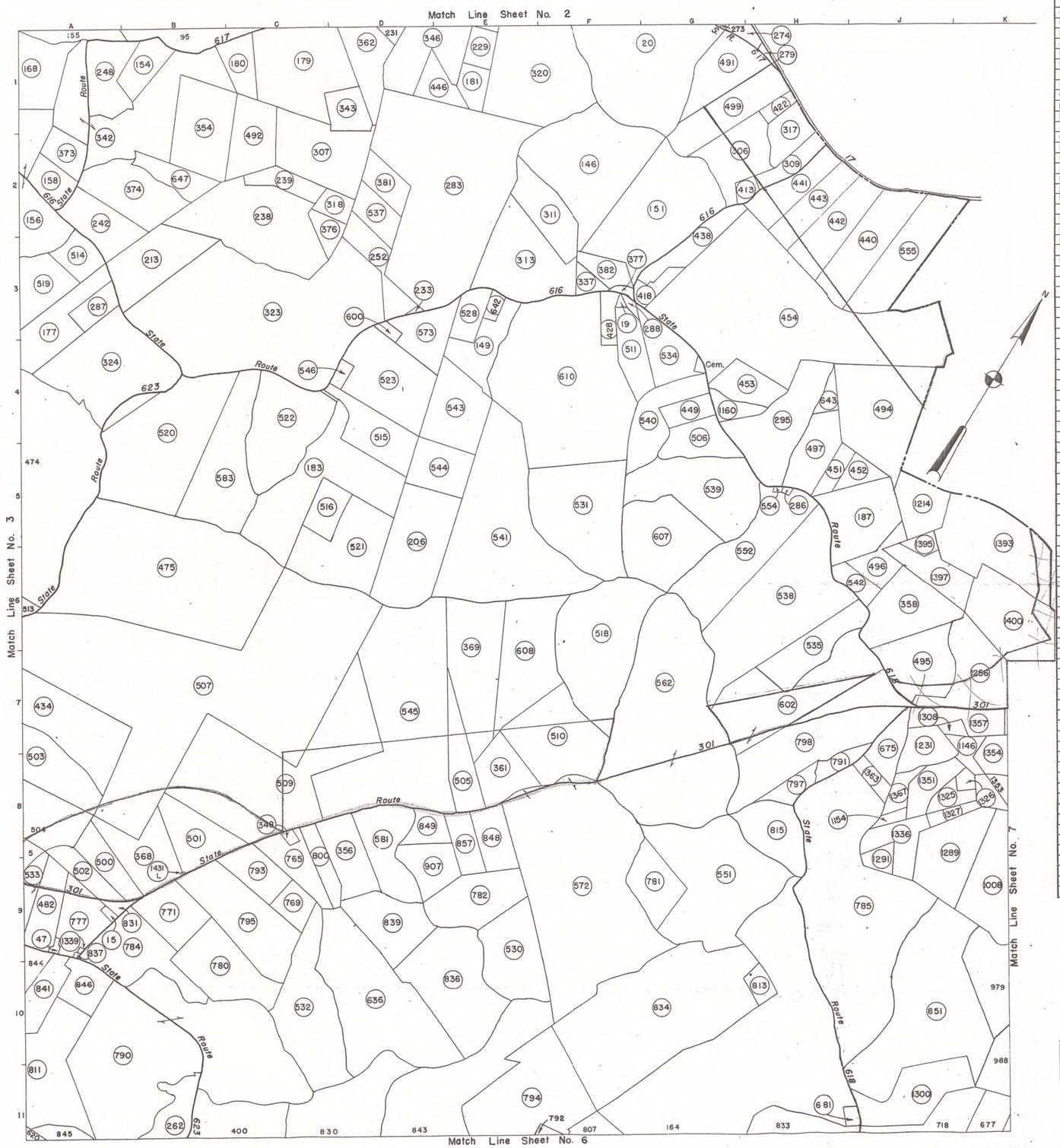
RECOMMENDED: John W. Powell, ASSOCIATE ENGINEER — DATE 20 Oct 1945
APPROVED: [signature], LT. COL., CORPS OF ENGINEERS — DATE 16 Oct 1945

COMPILED: C.E.G. TRACED: C.E.G. CHECKED:

DATE	BY	REVISIONS	APPROVED
11 APR. '55	K.V.M.	TRACT LOCATIONS ADDED.	
25 AUG. 58	S.S.W.	ADDED TRACT 1429 L	
14 DEC. '61	Y.P.P.	DIST. DESIGNATION CHANGED FROM WASH. TO BALTIMORE.	
18 DEC. '62	F.P.W.	DUE. TO FINAL AUDIT.	
1-29-75	R.W.H.	NAME CHANGED FROM CAMP, BY G.O. 45	

SHEETS: 3 OF 8 DRAWING NO. M. A. D. 15

CR-Form-177A



LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
G 5	539	Blanche Henderson et vir	111.60
G 4	540	Robert W. Baylor et al	50.60
E 5	541	Joseph M. Holloway et ux	235.00
J 6	542	Henry Johnson Est.	16.00
E 4	543	Percell D. Sale	64.60
E 5	544	James H. Taylor et al	42.30
D 7	545	Williard T. Boulware Est.	281.20
D 4	546	Lavina Parker et al	6.20
G 9	551	Willie Walker et ux	176.10
H 6	552	W. R. Carter Est.	107.60
H 5	554	Ruth R. Powers Admrx.	1.00
J 3	555	Virginia C. Watts et al	76.90
G 7	562	A.W. Cash et al	316.80
F 9	572	Luther T. Kay et ux	371.10
D 3	573	Effie Campbell	41.60
D 8	581	J. W. Phillips Jr.	60.20
B 5	583	Onan E. Taylor et al	109.20
D 3	600	Percell D. Sales	4.80
H 7	602	James Elmo Carleton etux	119.60
G 5	607	Ruth R. Powers, Admrx.	96.60
E 7	608	Ruth R. Powers, Admrx.	92.90
F 4	610	Geo. F. Conway et al	284.40
D 10	636	George W. Trice	182.50
E 3	642	Mary Hardman	5.00
H 4	643	James A. Holmes	9.00
B 2	647	Ruth R. Powers	26.50
J 8	675	George B. Cook et ux	22.00
C 9	765	John Henry & James Taylor	35.00
C 9	769	J. L. Lonesome Est. et al	20.80
B 9	771	Mary B. Boulware et al	45.20
A 9	777	John R. Purce	45.20
B 10	780	H. B. Smithers	77.90
G 9	781	Andrew, Cornelius & Onedia Roy	43.20
E 9	782	Mary C. Phillips Est., et al	63.20
B 9	784	Brewer V. Bruce et ux	72.80
J 8	785	Ruth R. Powers, Admrx.	329.00
A 10	790	Maitland U. Taylor et al	381.20
H 8	791	Arthur Jones et ux	14.00
C 9	793	George F. Lonesome et ux	33.80
E 11	794	Burley Miller et ux	158.40
C 9	795	George W. Pickett et ux	100.00
H 8	797	J. C. Ramsey	19.60
H 7	798	W. A. Rollins Est.	132.00
C 9	800	Moses Taylor	20.00
A 11	811	Joseph H. Bruce et ux	130.40
H 10	813	Mary Walton Saunders et al	12.80
H 8	815	Wm. A. Rollins et al	52.10
A 9	831	Edgar B. Grizzard	4.29
G 10	834	Charles M. Jordan	287.10
E 10	836	Ruth R. Powers Admrx et al	126.40
A 9	837	J. D. Smithers	0.50
D 9	839	Jane W. Trice Est	62.40
A 10	841	Dewey R. Wright et ux	55.20
A 10	846	Andrew D. Whittaker	30.00
E 8	848	May C. Phillips Est.	32.00
D 8	849	May C. Phillips Est.	17.20
J 10	851	Herbert Ferguson et ux	198.00
E 8	857	May C. Phillips Est.	26.00
D 9	907	May C. Phillips Est.	36.80
K 9	1008	J. W. Purce Est.	98.00
K 8	1146	Birdie E. Pratt	10.00
J 8	1154	John W. Surles et ux	5.00
G 4	1160	Andrew Lee Smith	13.00
J 5	1214	Wm. T. Powers et ux	43.50
J 7	1231	Henry Carter Est.	23.50
K 7	1256	William A. Rollins	86.50
J 9	1289	Lettie Carter	74.00
J 9	1291	Archy Jones et ux	12.00
J 11	1300	J. Woodie & Mary V. Loving	67.83
J 7	1308	Thomas J. Hill	5.00
J 8	1325	Isabella Gray Est.	11.00
K 8	1326	James H. Gray	6.00
J 8	1327	Joseph & Isabella Gray Est.	16.50
J 8	1336	Cosmore Jones	28.50
J 8	1351	Ruth R. Powers Admrx.	28.00
K 8	1354	Florence T. Purce Rich et al	20.50
K 7	1357	Sam Rollins et al	24.70
J 8	1363	Lucy Bundy et vir	8.00
J 8	1367	Sarah Surles Est.	9.00
K 6	1393	Stephen Garrett et ux	133.00
J 6	1395	R. J. Carter	11.00
J 6	1397	Joe D. Garnett et ux	33.00
K 6	1400	Fannie G. McKinney et vir	120.00
D 6	521	John E. Thomas et al	93.60
J 11	681	Herbert Ferguson et ux	4.00
A 9	1339	W. P. Burnett, Admin.	0.17

LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
A 9	15	Trustees of Caroline Co. School Bd.	2.00
F 3	19	Trustees of Caroline Co. School Bd.	1.00
G 1	20	Wirt T. Hicks et ux	236.00
A 9	47	Trustees of St. Paul Colored Church	1.60
F 2	146	Mary E. Hicks et al	156.50
E 4	149	Judson C. & E. P. Thomas	41.30
G 2	151	Tod Scott Henshaw et ux	152.40
B 1	154	Edith M. Travis et vir	29.20
A 2	156	John R. Travis et ux	91.80
A 2	158	Onan E. Taylor et ux	22.80
A 1	168	Annie Turner, et al	74.90
A 3	177	Mary E. Clarke	60.60
C 1	179	Susie Marye Keyser et vir	117.00
C 1	180	John R. Travis et al	23.20
E 1	181	John R. Travis et al	13.20
C 5	183	Ernest S. Robb et ux	141.40
J 5	187	Charles Rich Est.	79.00
D 5	206	Richard C. Buckner	106.50
B 3	213	B. Rudolph Clark	65.90
E 1	229	William Brown Est.	14.80
D 3	233	Edward Holmes Est.	1.20
C 2	238	Richard Dobbins	144.50
C 2	239	Alex & Richard Dobbins	20.80
A 2	242	Thomas K. Boulware et ux	43.00
A 1	248	Eddie Turner Est. et al	41.30
D 3	252	Laura Holmes Est.	35.50
B 11	262	Union Bank & Trust Co. Inc.	59.20
H 1	274	Albert Minor	9.60
H 1	279	Joseph T. Farish et al	1.60
E 2	283	Elliott Campbell, Jr. et al	328.80
H 5	286	Trustees of Zoar Church	1.00
A 3	287	T. K. Boulware et ux	19.20
F 3	288	Trustees of Mt. Olive Church	2.30
H 4	295	R. W. Carneal et ux	90.00
G 2	306	J. M. Holloway	56.00
C 2	307	Killis S. Jackson, et ux	86.80
H 2	309	William B. Reeves	22.00
F 2	311	James E. Robb Est.	50.40
E 3	313	Irene & Naomi Robb et al	95.60
H 2	317	Cyrus Satterwhite et al	28.00
D 2	318	Harry Coleman	14.50
F 1	320	William T. Powers et ux	128.50
C 3	323	Maude E. Harris	366.80
A 4	324	George W. Taylor et ux	143.90
F 3	337	Anne M. Rollins et vir	9.60
F 2	342	Mrs. Mary Elizabeth Clarke et al	147.10
D 1	343	Travis Jackson	24.80
D 1	346	Alex Dobbins et al	92.30
C 8	348	William H. Johnson	1.50
B 1	354	Ruth R. Powers, Admrx.	79.30
D 8	356	Charles H. Carter Est.	44.00
J 6	358	Frank B. Beazley et ux	67.80
E 8	361	Robert Roy Est.	38.00
D 1	362	Ruth R. Powers, Admrx. et al	52.00
B 8	368	Hattie Bundy et al	56.80
E 7	369	Ryan Gannett Wright et ux	105.80
A 2	373	William R. Young	23.20
B 2	374	Ada Lou Bowie et al	70.40
D 2	376	Nancy Coleman	13.70
F 3	377	Bettie Gatewood Est.	3.20
D 2	381	O. E. & M. U. Taylor	24.00
F 3	382	Elizabeth J. Vaughan	18.80
H 2	413	Frances Brooks Est.	6.00
G 3	418	Luther A. Johnson et ux	12.40
H 1	422	Ruth R. Powers, Admrx. et al	7.80
F 3	428	Charles Vaughan	13.40
A 7	434	Bradford F. Carter et ux	128.40
G 3	438	William H. Rollins et ux	34.50
J 3	440	John E. Samuel et al	78.40
H 2	441	W. B. Samuel	40.00
H 2	442	N. Bagby Samuel et al	60.80
H 2	443	Thomas H. Samuel et al	40.00
E 1	446	F. M. Travis	21.50
G 4	449	William B. Bundy	16.40
H 5	451	Alice Johnson Est.	14.00
J 5	452	Ella Jones Est.	13.80
H 4	453	William B. Bundy	21.50
H 3	454	Maurice Grady Clarke	385.20
B 6	475	M. B. Kay et al	350.40
A 9	482	Ephraim L. Hardman	38.10
G 1	491	Daisey H. Elmore et al	54.60
C 2	492	David Young Est.	50.00
J 4	494	J. Henry Rowlett	120.40
J 7	495	Ida Rollins et al	70.00
J 6	496	Harry Johnson	21.30
H 5	497	Thomas Holmes Est.	42.30
G 1	499	Elnora & Robt. Page	62.40
A 9	500	Clarence Taylor, et al	30.80
B 8	501	Ruth R. Powers, Admrx.	52.80
A 9	502	Alex Roy	25.20
A 8	503	Claude Brooks et ux	106.00
E 8	505	Lyle B. Gray	39.60
G 5	506	Mattie Hardman & Katherine Smith	39.40
B 7	507	Luther T. Kay et ux	650.60
C 8	509	Norman H. Myers et al	253.00
F 7	510	James W. Phillips et ux	95.10
F 4	511	Beatrice Pratt	34.60
A 3	514	Maurice B. Kay et al	24.20
D 4	515	Irene P. Robb et al	54.30
C 5	516	Onan E. Taylor et ux	24.40
F 6	518	Lola M. Wright et al.	152.80
A 3	519	Maurice B. Kay et al	55.40
B 4	520	Onan E. Taylor et al	180.60
C 4	522	John E. Thomas et al	102.50
D 4	523	Onan E. Taylor et ux	93.70
E 3	528	Mattie Smith	22.60
E 9	530	Frances Powers. Est.	78.90
F 5	531	Lawrence Reeves	139.60
C 10	532	Ruth R. Powers, Admrx.	119.50
A 9	533	J. R. Parker	27.70
G 4	534	John E. Monroe Est.	41.20
H 7	535	Wren C. Martin et ux	54.20
D 2	537	Isabella Holmes	24.00
H 6	538	Lucy Etta Hearn et al	186.40

LOC. NO.	TRACT NO.	VENDOR	LESSER INT.
B 9	1431-L	Commonwealth of Virginia	0.03

AUDITED NO. 4650

NOTE: Cemeteries are indicated Thus ■

*Now Under Jurisdiction Of Norfolk District.
RETURNED TO BALTO. DIST. 7-1-70

FINAL PROJECT OWNERSHIP
(TYPE OF MAP)

STATE: VIRGINIA
COUNTY: CAROLINE
DIVISION: NORTH ATLANTIC
DISTRICT: *BALTIMORE (TO NORFOLK DIST. 12-1-73)
ARMY AREA: FIRST
USING AGENCY: DEPT OF THE ARMY
20 MILES SE OF FREDERICKSBURGH
1 MILE E OF BOWLING GREEN

TRANSPORTATION FACILITIES

RAILROAD: R.F. & P. RR.
STATE ROAD: 2, 207, 301
FEDERAL ROAD: 17
AIRLINE:

LAND AREA

ACRES OWNED BY W.D.:
ACRES LEASED BY W.D.: SEE SHEET #1
ACRES LEASED FROM W.D.:
ACRES TRANSFERRED TO W.D.:
ACRES DONATED TO W.D.:

DISPOSALS

ACRES SOLD:
ACRES TRANSFERRED:
ACRES EXCHANGED:
ACRES OTHERWISE:

LEGEND

RESERVATION LINE
STATE OR PROVINCE LINE
COUNTY LINE
CIVIL DISTRICT PRECINCT
LAND-GRANT LINE
CITY, VILLAGE, OR BOROUGH
CEMETERY, SMALL PARK, ETC.
TOWNSHIP LINE
SECTION LINE

Scale
SCALE: 1" = 1/4 MILE
1/4 1/8 0 1/4 1/2 3/4 1

WAR DEPARTMENT, O.C.E.
CONSTRUCTION DIVISION

REAL ESTATE
FORT A.P. HILL
MILITARY RESERVATION

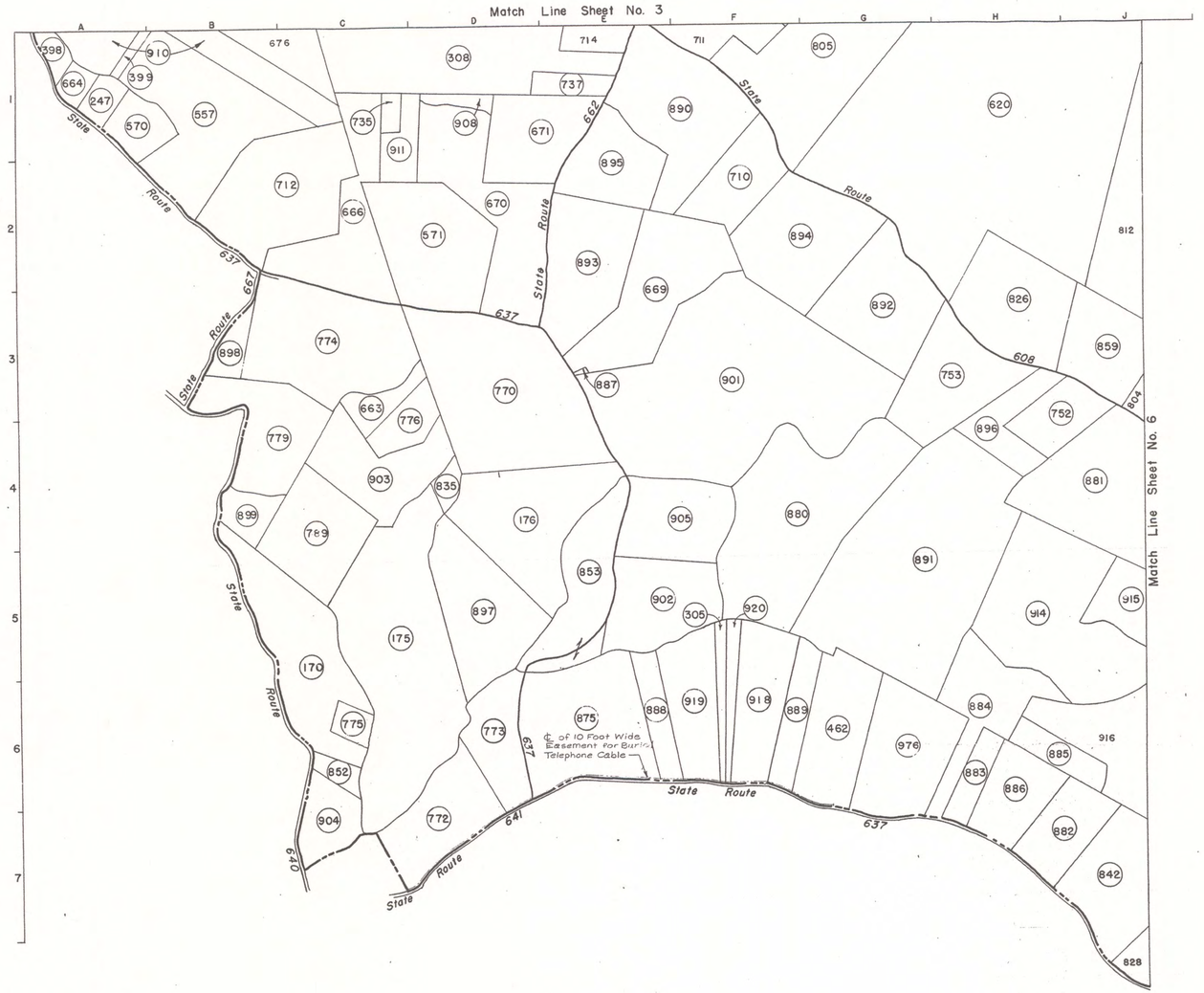
RECOMMENDED: John W. Powell, ASSOCIATE ENGINEER — DATE: 20 Oct. 1945
APPROVED: [illegible], LT. COL., CORPS OF ENGINEERS — DATE: 16 Oct. 1945

COMPILED: C.E.G. TRACED: C.E.G. CHECKED:

DATE	BY	REVISIONS	APPROVED
26 JAN 75	RWH	NAME CHANGED FROM CAMP, BY G.O. 45	
18 DEC. '82	F.P.W.	DUE TO FINAL AUDIT.	
14 DEC. '87	S.S.W.	DIST. DESIGNATION CHANGED FROM WASH. TO BALTIMORE.	
11 APR. '55	D.K.M.	TRACT LOCATIONS ADDED	

SHEETS: 4 OF 8 DRAWING NO. M.A.D. 15

CR-Form-177A



LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
C 5	170	J. Curtis Eagar et ux	137.00
C 5	175	Nettie M. Eagar	266.50
D 4	176	Richard B. Fortune	133.80
A 1	247	Jerry Baylor et ux	15.00
F 5	305	Mary C. Allport Est.	14.50
D 1	308	Homer H. Bruce et ux	163.00
A 1	398	Jerry Baylor et ux	10.00
A 1	399	Peter Ferguson Est.	5.00
G 6	462	George Allen Gray et ux	86.00
B 1	557	Harvey S. Broaddus	145.80
A 1	570	Aubrey A. Brooks	30.00
D 2	571	Madeline A. Broaddus et al	120.00
H 1	620	R. C. Travis et al	732.20
C 3	663	Ruth R. Powers, Admrx.	20.00
A 1	664	Nannie Samuels et al	12.50
C 2	666	Lloyd G. Taylor et al	101.50
E 3	669	James C. Andrews, et ux	117.00
D 2	670	James C. Andrews, et ux	127.00
E 1	671	Lucian F. Bruce et ux	75.00
F 2	710	James Pelham Broaddus et ux	61.00
C 2	712	Wayland S. Broaddus et ux	135.00
C 1	735	Edward Stuart et al	6.00
E 1	737	Annie Washington et vir	18.00
H 4	752	Harry Martin et ux	47.00
H 3	753	Harry Martin et ux	92.50
D 3	770	Cornelius C. Broaddus et al	216.00
D 7	772	John Frawner (Fraughnaugh) Est.	70.00
D 6	773	James I. & A. Fraughnaugh Est.	50.00
C 3	774	J. Bond Meyer et al	156.00
C 6	775	Aubrey Myers et al	10.00
C 4	776	Aubrey Myers et al	28.00
B 4	779	Allie B. Winder et vir	90.00
C 4	789	Lucy Howard	90.00
G 1	805	Eustace M. Penney et ux	211.60
H 3	826	Charlie B. Pitts et ux	114.00
D 4	835	Otho P. Myers et ux	8.00
J 7	842	G. R. Dorsey et al	134.00
C 6	852	Roland Myers	10.00
E 5	853	John Henry Tucker et ux	76.00
J 3	859	Philip Rowland Carter et al	76.00
E 6	875	J. M. Chinault et ux	143.00
F 4	880	Bettie A. Brooks	225.00
J 4	881	Robert B. Gouldin et ux	162.50
H 7	882	Clyde W. Puller et ux	52.00
H 6	883	Clyde W. Puller et ux	25.00
H 6	884	H. T. Latney et al	84.00
H 6	885	William U. Christopher et ux	25.00
H 6	886	C. B. Gray et ux	57.00
E 3	887	Nellie J. Campbell et vir	1.00
E 6	888	Humphrey P. Latney et al	30.00
F 6	889	J. C. Christopher et al	36.00
F 1	890	J. J. Broaddus et al	133.00
G 5	891	Bessie M. Brooks et al	323.50
G 3	892	James H. Wright et ux	100.00
E 2	893	T. Judson Carter Est.	97.00
G 2	894	Richard B. Andrews	118.00
E 2	895	Leonard L. Campbell, et al	60.50
H 4	896	Russell Webb Carter et ux	42.20
D 5	897	W. Scott Whittaker Est.	111.50
B 3	898	W. D. Gravatt et al	17.00
F 3	901	A. J. Carter	385.00
E 5	902	C. S. Brooks	80.00
C 4	903	Ada Saunders et al	80.00
C 7	904	Daisy S. Beazley	44.00
F 4	905	Fred K. Brooks et ux	80.00
D 1	908	Luther T. Kay et ux	10.00
B 1	910	Frances Allen Roberts et al	103.50
C 1	911	Frances Allen Roberts et al	23.00
H 5	914	Erma G. Wright et al	205.00
J 5	915	Rockie B. Wright et vir	68.00
F 6	918	Frank B. Proctor et al	71.80
F 6	919	Frank B. Proctor et al	71.50
F 6	920	Frank B. Proctor et al	14.50
G 6	976	E. G. Carter et ux	95.50
B 4	899	Lawrence E. Sale et al	20.00

NOTE:
Cemeteries are Indicated Thus ■

AUDITED NO. 4650

*Now Under Jurisdiction Of Norfolk District.
RETURNED TO BALTO. DIST. 7-1-70
" " NORFOLK DIST 12-1-73

FINAL PROJECT OWNERSHIP
(TYPE OF MAP)

STATE: VIRGINIA
COUNTY: CAROLINE
DIVISION: NORTH ATLANTIC
DISTRICT: *BALTIMORE
ARMY AREA: FIRST
USING AGENCY: DEPT OF THE ARMY
20 MILES S E OF FREDERICKSBURG
1 MILE E OF BOWLING GREEN

TRANSPORTATION FACILITIES

RAILROAD: R.F. & P.R.
STATE ROAD: 2, 207, 301
FEDERAL ROAD: 17
AIRLINE:

LAND AREA

ACRES OWNED BY W.D.:
ACRES LEASED BY W.D.: SEE SHEET #1
ACRES LEASED FROM W.D.:
ACRES TRANSFERRED TO W.D.:
ACRES DONATED TO W.D.:

DISPOSALS

ACRES SOLD:
ACRES TRANSFERRED:
ACRES EXCHANGED:
ACRES OTHERWISE:

LEGEND

RESERVATION LINE
STATE OR PROVINCE LINE
COUNTY LINE
CIVIL DISTRICT PRECINCT
LAND-GRANT LINE
CITY, VILLAGE, OR BOROUGH
CEMETERY, SMALL PARK, ETC.
TOWNSHIP LINE
SECTION LINE

Scale

SCALE: 1" = 1/4 MILE

1/8 1/8 0 1/4 1/2 3/4 1

WAR DEPARTMENT, O.C.E.
CONSTRUCTION DIVISION

REAL ESTATE
FORT A. P. HILL
MILITARY RESERVATION

RECOMMENDED: John W. Powell, ASSOCIATE ENGINEER DATE 20 Oct. 1945
APPROVED: L. G. Brown, LT. COL., CORPS OF ENGINEERS DATE 16 Oct. 1945

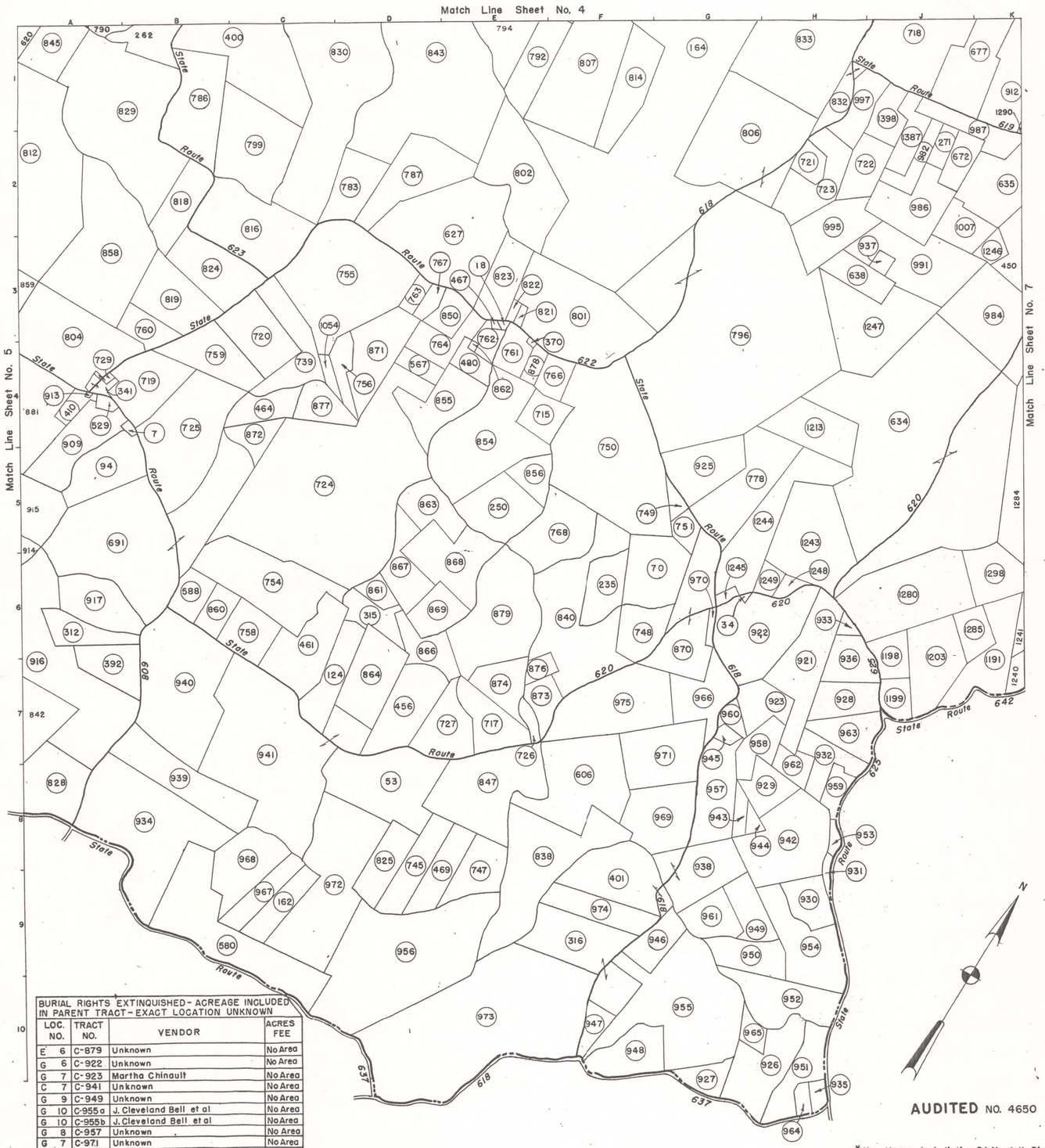
COMPILED: G.E.G. TRACED: G.E.G. CHECKED:

DATE	BY	REVISIONS	APPROVED
1-29-75	RWH	NAME CHANGED FROM CAMP, BY G.O. 45	
18 DEC. '62	F.P.W.	DUE TO FINAL AUDIT.	
12 DEC. '61	F.P.W.	DIST. DESIGNATION CHANGED FROM WASH. TO BALTIMORE	
11 APR. '55	K.V.M.	TRACT LOCATIONS ADDED	

SHEETS: 5 OF 8 DRAWING NO. M.A.D. 15

CR-Form 177A

"IMPERIAL" TRACING CLOTH K & E CO., N. Y.



BURIAL RIGHTS EXTINQUISHED - ACREAGE INCLUDED IN PARENT TRACT - EXACT LOCATION UNKNOWN			
LOC. NO.	TRACT NO.	VENDOR	ACRES FEE
E 6	C-879	Unknown	No Area
G 6	C-922	Unknown	No Area
G 7	C-923	Martha Chinault	No Area
C 7	C-941	Unknown	No Area
G 9	C-949	Unknown	No Area
G 10	C-955a	J. Cleveland Bell et al	No Area
G 10	C-955b	J. Cleveland Bell et al	No Area
G 8	C-957	Unknown	No Area
G 7	C-971	Unknown	No Area
C 9	C-972	J. E. Anderson et ux	No Area
F 7	C-975	Martha A. Lee et al	No Area
J 3	C-991	Unknown	No Area

NOTE:
Cemeteries are indicated Thus ■

AUDITED NO. 4650

*Now Under Jurisdiction Of Norfolk District.
RETURNED TO BALTO. DIST. 7-1-70
" " NORFOLK DIST. 12-1-75

LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE	LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
D 7	864	Belle Whittaker et al	62.70	B 4	7	Trustees of Caroline Co. School Bd.	2.00
D 6	866	James Wright et al	19.50	E 3	18	Trustees of Caroline Co.School Bd.	1.00
D 6	867	Delia Sale et vir	36.00	G 6	34	Trustees of Caroline Co.School Bd.	0.50
E 6	868	Alexander Sale et al	61.50	D 8	53	Edwin M. Andrews et ux	98.00
D 6	869	Harry Beazley Est	31.00	F 6	70	J. William Gouldin et al	54.50
G 6	870	Nora C. Wright et al	83.00	A 5	94	Richard T. Jones et ux	56.30
D 4	871	Ellis Holmes	52.50	C 7	124	Harry Beazley et ux	37.20
C 4	872	Frank Johnson, et al	20.00	C 9	162	Alfred R. Collins et ux	30.00
E 7	873	Sally Holmes	17.00	G 1	164	Frederick C. Shaddock et al	783.20
E 7	874	Harry Beazley et al	33.00	F 6	235	Harry M. Beazley et ux	32.00
E 7	876	Major Holmes Est.	8.00	E 5	250	Charles Sheppard et ux	50.00
C 4	877	Mack C. Gray et ux	25.80	J 2	271	Elizabeth Vaughan et al	10.00
E 4	878	Wm. H. Jackson et ux	5.00	A 6	312	Harry H. Armistead et ux	30.00
E 6	879	Otho L. Vaughan et ux	107.00	D 6	315	Lawrence P. Beazley et ux	22.00
A 4	909	B. L. Parr et ux	59.66	F 9	316	Floyd Farmer et ux	89.00
K 1	912	Walter Saunders et ux	75.75	A 4	341	Trustees Upper Zion Church	4.60
A 4	913	E. B. Wright et ux	0.50	E 4	370	Trustees Union Baptist Church	1.00
A 7	916	Willie D. Young et al	229.00	A 7	392	Joseph Christopher et al	36.50
A 6	917	Walter G. Young Est.	51.50	C 1	400	P. E. Brame	162.40
H 7	921	Alexander Dennis Est.	72.50	F 9	401	Lloyd Farmer et al	68.00
G 6	922	Samuel F. Farmer et ux	90.00	A 4	410	Alice Carter Gray et vir	8.00
G 7	923	Julian B. Wright et ux	30.00	D 7	456	George Baylor Est.	56.00
G 5	925	Samuel F. Farmer et ux	52.50	C 6	461	Andrew Beazley et ux	64.00
G 10	926	Anna Johnson Gibson et al	59.25	C 4	464	Frank Johnson	25.00
G 11	927	Virgie M. Johnson et al	18.50	E 3	467	James Johnson et al	1.00
H 7	928	R. B. Chinault et al	30.00	D 9	469	Hattie C. Farmer et vir	33.30
G 8	929	R. B. Chinault et al	25.00	E 4	480	Frank B. Beazley et al	14.00
H 9	930	E. P. Elliott et al	30.00	A 4	529	Frank M. Houston et al	4.00
H 9	931	Eustace M. Elliott	4.00	D 4	567	Ellis Holmes et al	12.60
H 7	932	Fernie Jordan	30.00	B 9	580	Thomas A. Samuel Est.	125.00
H 6	933	Julian L. Johnson et al	5.00	B 6	588	Andrew Beazley et ux	20.00
B 8	934	Everett C. Jordan et ux	154.00	F 8	606	Luther E. Wright, et al	100.00
H 11	935	Carter L. Loving	6.00	E 3	627	Charles C. Penney et ux	159.10
H 6	936	Pearl E. Morris et al	30.00	J 4	634	Clarence S. Farmer et ux	429.00
J 3	937	John Turner et al	5.00	K 2	635	Harry Farmer et al	64.00
G 9	938	Ida Hayes	60.00	H 3	638	Albert Garnett Est.	25.00
B 8	939	Pearl E. Ilgenfritz et al	76.00	J 2	672	Victoria Green Broaddus et al	20.00
B 7	940	M. H. Jones et al	149.00	K 1	677	Harriet B. Gray	90.00
C 7	941	Robert Lee Jones et ux	234.50	A 5	691	O. Jennings Beazley et ux	220.50
H 8	942	Eustace M. Elliott et al	93.00	E 4	715	Henry Coleman et ux	25.00
G 8	943	Eliza Johnson Est.	8.00	E 7	717	Taylor Farmer et ux	40.00
G 8	944	Salina Johnson	6.00	J 1	718	Ella Ferguson et al	128.75
G 7	945	Andrew Jackson Est.	5.00	B 4	719	Blanche V. Henderson et al	54.80
F 9	946	Frances Samuel Est.	26.00	C 3	720	Richard T. Jones et al	54.50
F 10	947	Arthur L. Taylor et ux	11.60	H 2	721	Annie B. Lumpkin et vir	15.00
F 10	948	Willie Webb McDonald et ux	40.00	H 2	722	Annie B. Lumpkin et vir	32.00
G 9	949	Henry W. Jeter et al	26.00	H 2	723	Jessie F. Lumpkin et ux	49.00
G 9	950	R. I. Jeter Est.	33.00	C 5	724	Harry Martin et ux	367.50
H 10	951	Eustace M. Johnson et ux	42.50	B 4	725	Melchi M. Mundie et al	120.50
H 10	952	Hartwell Parker et al	56.50	E 7	726	Melchi Mundie et ux	7.00
H 8	953	Thomas Whiting	4.80	E 7	727	Melchi Mundie et ux	39.00
H 9	954	James P. Bruce et al	67.20	A 4	729	J. W. Poats et ux	1.10
G 10	955	Judson T. Wheely	165.80	C 4	739	J. W. Elliott	49.20
D 9	956	W. J. Anderson et ux	210.00	D 8	745	Arthur Farmer et ux	33.30
G 8	957	Melvin Carter et al	48.50	E 9	747	Bertha Parker et vir	37.30
G 7	958	Melvin Carter et al	25.00	F 6	748	Emanuel Epps et ux	33.50
H 8	959	Henry Dennis	15.00	G 5	749	James T. Johnson et al	7.00
G 7	960	Major White Est.	8.00	F 5	750	W. Francis Jordan et ux	218.50
G 9	961	Ruth R. Powers, Admrx.	30.00	G 5	751	James A. Johnson et ux	11.20
H 8	962	Ruth R. Powers, Admrx.	15.00	C 6	754	E. Henry Motley et al	103.20
H 7	963	Virginia R. Farmer, et al	33.00	D 3	755	Joseph E. Penney et ux	152.00
H 11	964	Danbridge Johnson Est.	6.00	D 4	756	Ruth R. Powers, Admrx.	16.50
G 10	965	Ruth R. Powers, Admrx.	11.00	C 6	758	Everette J. Beazley et ux	37.00
G 7	966	Ruth R. Powers, Admrx.	45.50	B 4	759	Reta R. Gray	51.00
C 9	967	Ruth R. Powers, Admrx.	29.50	B 3	760	Reeta Reeves Gray et al	22.50
C 8	968	Ruth R. Powers, Admrx.	57.00	E 4	761	Susie B. Jones et al	19.00
G 8	969	W. Melvin Wright et ux	63.00	E 4	762	Jennie Jones	8.30
G 6	970	W. Melvin Wright et ux	4.00	D 3	763	C. C. Johnson et ux	8.30
G 7	971	Andrew Carter et ux	66.30	D 4	764	Robert B. Johnson	28.30
C 9	972	Daisy Christian	140.00	F 4	766	Thurston Thornton et ux	15.00
E 10	973	Maude E. Harris	326.00	D 3	767	Harry Lee Johnson et al	8.30
F 9	974	Maude E. Harris et al	37.00	F 5	768	Andrew L. Wright et ux	60.00
F 7	975	John H. Houston et ux	91.50	G 5	778	W. Bowie Motley et ux	80.00
J 2	982	Charles Ware et al	18.00	D 2	783	Melvin Carter et ux	43.20
K 3	984	Warner Hair Timmons et al	93.00	B 1	786	Federal Farm Mortgage Co.	77.30
J 2	986	W. A. Green Est.	53.70	D 2	787	George Allen Gray et ux	72.40
K 2	987	Lettie Green et al	35.20	E 1	792	Charles M. Jordan	44.60
J 3	991	E. D. Turner et al	89.00	G 3	796	Stanley T. Presgraves	506.50
H 2	995	Alexander Ferguson Est.	48.00	C 2	799	Ernest Taliaferro	94.80
H 1	997	Andrew Ferguson Est.	36.00	F 3	801	W. Melvin Wright et ux	140.80
J 2	1007	Heirs of Lewis Hall & Ruth R. Powers, Admrx	29.00	E 2	802	Alice B. Wright et al	102.40
C 4	1054	Frank B. Beazley et al	10.00	A 3	804	Lucy Taylor Pitts	118.00
K 7	1191	Harvey Askins et ux	41.00	G 2	806	Wm. Ancel Gravatt et al	153.00
J 7	1198	Virgie R. Farmer, et al	20.00	F 1	807	Alex Ferguson Est.	129.20
J 7	1199	J. Leonard Farmer	19.00	A 2	812	Wellford Whittaker	235.00
J 7	1203	Warren L. Lee et ux	50.00	F 1	814	Julian L. Wharton et al	54.40
H 4	1213	Ruth R. Powers, Admrx.	50.00	C 2	816	Ruth R. Powers, Admrx.	104.00
H 5	1243	Gracie L. Wright et vir	107.00	B 2	818	John Chandler et al	40.00
G 5	1244	M. Weston Collawn et ux	77.00	B 3	819	Myrtle Ferguson	57.00
G 6	1245	Daisy Christian	3.00	E 3	821	Ben Lonesome et ux	2.50
K 3	1246	Lou Eubank et al	9.00	E 3	822	Virginia Lonesome Jones	2.50
J 3	1247	Robert L. Wright et ux	92.00	E 3	823	Ben Lonesome et al	39.20
H 6	1248	Alexander Dennis Est.	6.50	B 3	824	Maude B. Motley et al	57.20
H 6	1249	W. H. Dennis Est.	8.70	D 8	825	Taylor Farmer et ux	34.00
J 6	1280	Bertha A. Carter et vir	105.00	A 8	828	Dewitt C. Houston	66.00
J 6	1285	Montague Epps Est.	20.00	B 1	829	Russell J. Elliott et al	212.20
K 6	1298	William Roots et ux	37.00	D 1	830	Charles W. Garnett et ux	273.60
J 2	1387	Ruth R. Powers, Admrx.	23.70	H 1	832	Mary F. Golden	18.75
J 2	1398	Martha Ferguson	25.00	H 1	833	Charles Murray Jordan et al	156.20
				E 8	838	Robert W. Harris et ux	138.00
				F 6	840	Grace T. Moore et al	129.00
				D 1	843	Union Bank & Trust Co. of Bowling Green, Va	361.60
				A 1	845	Willie Walker et ux	44.00
				E 8	847	Bertha Parker et vir	108.50
				E 3	850	James Johnson et al	16.60
				E 4	854	Ernest Vaughan et ux	125.00
				D 4	855	Wilson Miller et ux	52.00
				E 5	856	John L. Jones	20.00
				A 3	858	Philip Rowland Carter	14.80
				B 6	860	Gerrie B. Schools, et vir	20.00
				D 6	861	Clem Vaughan	10.00
				E 4	862	Philip Johnson Est.	7.00
				D 5	863	John Hamilton Sales Est.	31.50

FINAL PROJECT OWNERSHIP
(TYPE OF MAP)

STATE VIRGINIA
COUNTY CAROLINE
DIVISION NORTH ATLANTIC
DISTRICT *BALTIMORE
ARMY AREA FIRST
USING AGENCY DEPT OF THE ARMY
20 MILES S E OF FREDERICKSBURG
1 MILE E OF BOWLING GREEN

TRANSPORTATION FACILITIES

RAILROAD R.F. & P. RR.
STATE ROAD 2, 207, 301
FEDERAL ROAD 17
AIRLINE

LAND AREA

ACRES OWNED BY W.D.
ACRES LEASED BY W.D. SEE SHEET #1
ACRES LEASED FROM W.D.
ACRES TRANSFERRED TO W.D.
ACRES DONATED TO W.D.

DISPOSALS

ACRES SOLD
ACRES TRANSFERRED
ACRES EXCHANGED
ACRES OTHERWISE

LEGEND

RESERVATION LINE
STATE OR PROVINCE LINE
COUNTY LINE
CIVIL DISTRICT PRECINCT
LAND-GRANT LINE
CITY, VILLAGE, OR BOROUGH
CEMETERY, SMALL PARK, ETC.
TOWNSHIP LINE
SECTION LINE

Scale
SCALE: 1" = 1/4 MILE
1/4 1/8 0 1/4 1/2 3/4 1

WAR DEPARTMENT, O.C.E.
CONSTRUCTION DIVISION

REAL ESTATE
FORT A. P. HILL
MILITARY RESERVATION

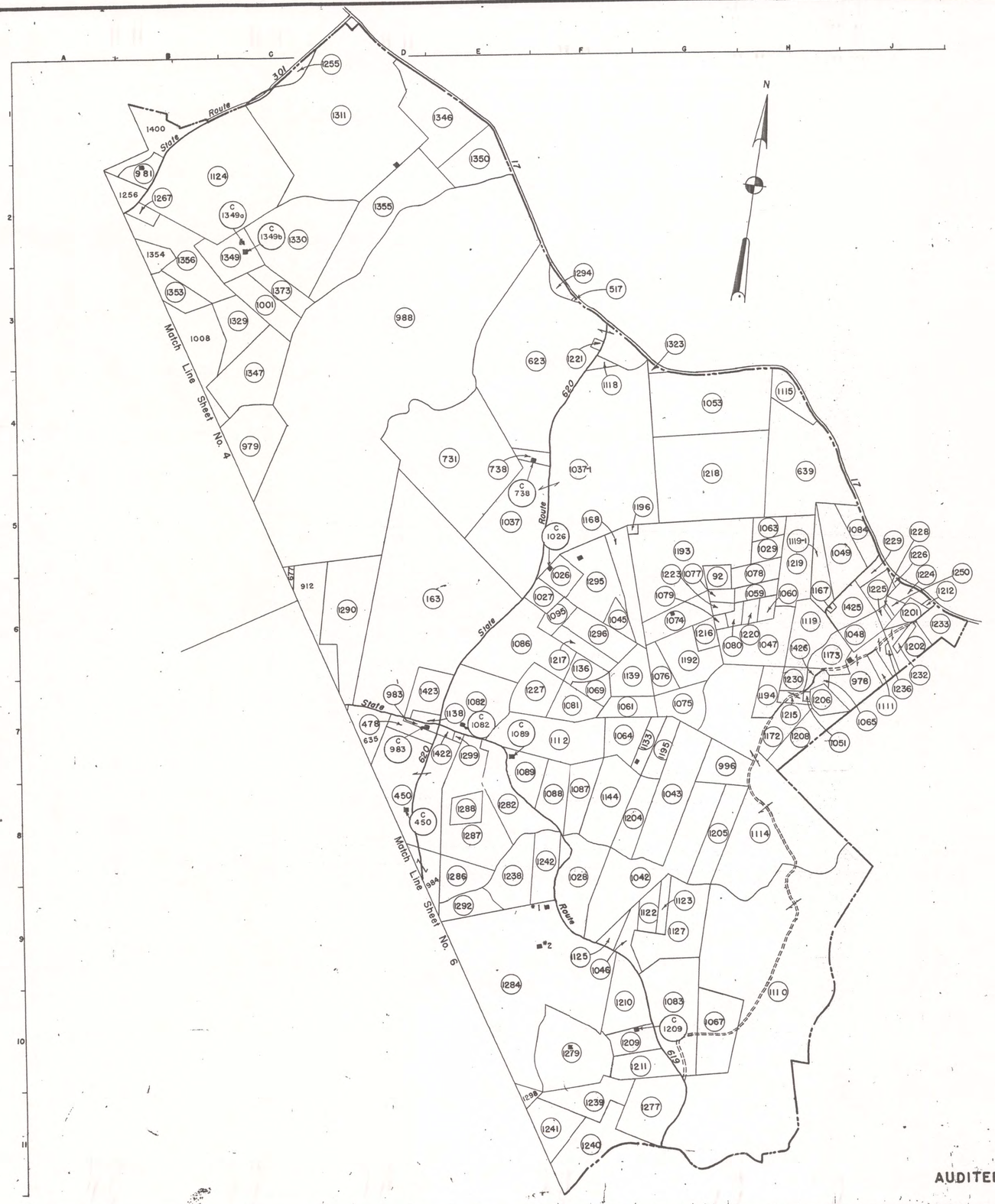
RECOMMENDED: John W. Powell, ASSOCIATE ENGINEER DATE 12 Oct. 1945
APPROVED: [signature], LT. COL., CORPS OF ENGINEERS DATE 16 Oct. 1945

COMPILED: C.E.G. TRACED: C.E.G. CHECKED:

DATE	BY	REVISIONS	APPROVED
1-29-75	RWH	NAME CHANGED FROM CAMP, BY G.O. 45	
18DEC.'62	R.F.W.	DUE TO FINAL AUDIT.	
14DEC.'61	S.S.W.	DIST. DESIGNATION CHANGED FROM WASH. TO BALTIMORE	
11APR.'55	K.V.M.	TRACT LOCATIONS ADDED	

SHEETS: 6 OF 8 DRAWING NO. M.A.D. 15

CR-Form-177A



LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
C 1	1255	A. J. Gouldman et ux	7.00
B 2	1267	Hattie Rich Maddux et vir	6.00
G 11	1277	Annie E. Upshur	46.50
F 10	1279	John Bundy et ux	68.00
E 8	1282	H. V. Chinault et ux	46.50
E 10	1284	George R. Dorsey	312.00
E 8	1286	Thomas B. Farmer et ux	27.50
E 8	1287	George W. Garrett et ux	79.00
E 8	1288	Roger L. Garrett et vir	12.00
D 6	1290	Sarah H. Gravatt	75.75
E 9	1292	Harry Latney Lee Jr. et ux	18.00
F 3	1294	Charles P. Powers et ux	5.00
F 6	1295	R. R. Powers	50.00
F 6	1296	Ruth R Powers, Admrx.	25.49
E 7	1299	Maude R. Whittaker et al	1.00
D 1	1311	Lelia W. Farrish	315.00
G 4	1323	Arthur C. Farmer et ux	2.60
C 3	1329	Thomas J. Hill et ux	34.80
C 2	1330	J. Howell Jeter	100.00
E 1	1346	C. P. Powers et ux	70.50
C 4	1347	Charles P Powers et al	66.00
C 2	1349	Ruth R. Powers, Admrx.	30.00
E 2	1350	Ruth R. Powers, Admrx.	32.50
B 3	1353	F. F Purce et ux	27.00
D 2	1355	Thomas Rich et ux	97.00
B 2	1356	Robert Rich Est.	59.70
C 3	1373	Ashby Vaughn et al	20.00
E 7	1422	Susie (Garrett) Watts	2.50
D 7	1423	Susie Watts	20.00
J 6	1425	Edmund West Est.	19.00
H 7	1426	William Gaines Est.	4.00
H 6	1119-1	William Arthur Young	15.00
F 5	1037-1	Thomas Wesley Morton	259.00
D 8	C- 450	Unknown	No Area
E 4	C- 738	Unknown	No Area
D 7	C- 983	Unknown	No Area
F 6	C-1026	Unknown	No Area
E 7	C-1082	Heirs Of James H. Wright, Sr.	No Area
E 7	C-1089	James Lumpkin et ux	No Area
F 10	C-1209	Unknown	No Area
C 2	C-1349a	Unknown	No Area
C 2	C-1349b	Unknown	No Area

LOCATION NO.	TRACT NO.	VENDOR	ACRES FEE
G 6	92	Eddie Willis Johnson et al	10.00
E 6	163	Richard C. Carter et ux	309.00
D 8	450	H. V. Chinault et ux	118.50
D 7	478	Eva Clark et vir	7.00
F 3	517	Richard T. Pratt et ux	0.50
F 4	623	Maude E. Harris	243.00
H 5	639	Martha S. Boyle et vir	110.00
E 4	731	Frank H. Morton et ux	200.00
E 4	738	Virginia E. Morton	7.00
J 7	978	Silas Green Est.	26.00
C 4	979	F F Purce et ux	110.50
B 2	981	Nora E. Loving et al	12.00
D 7	983	Susie (Garrett) Watts et al	3.20
D 3	988	James T. Powers	812.50
G 7	996	Richard Brooks et ux	25.00
C 3	1001	Henry Carter Est.	33.50
F 6	1026	Rosa F. Garrett et vir	15.00
F 6	1027	William R. Garrett et ux	10.00
F 9	1028	John H. Hall et ux	51.50
H 5	1029	Clarence Jackson	10.00
F 5	1037	Thomas Wesley Morton	90.00
F 9	1042	R. R. Powers	96.50
G 8	1043	Ruth R. Powers, Admrx.	67.80
F 6	1045	Elizabeth T. Ruffin et al	10.00
F 9	1046	Nathaniel Upshaw et ux	15.00
H 6	1047	Cosmore Young et ux	55.50
J. 6	1048	Fred Young et ux	11.20
H 5	1049	James H. Young Est	26.00
H 7	1051	Judson Morton	1.00
G 4	1053	Bedford K. Smith	100.00
H 6	1059	Robert Dennis	8.00
H 6	1060	Walker Dennis et ux	6.00
F 7	1061	Clarence Foster et ux	19.50
H 5	1063	Daniel Jackson et ux	10.00
F 7	1064	Mary Jackson, et al	24.30
H 7	1065	Harry Lee et al	2.75
G 10	1067	Dora Loving, et al	50.00
F 7	1069	Maggie Morton et al	10.00
G 6	1074	Betsy Saunders Est.	25.00
G 7	1075	Robert N. Ware et al	26.00
G 7	1076	Robert W. Ware et ux	13.50
G 6	1077	James H. Ware et ux	5.00
H 6	1078	Frank Wheeler et ux	16.10
G 6	1079	Winny Whiting Est.	3.00
G 6	1080	Spencer Whiting et ux	5.00
F 7	1081	Mabel Whittaker et vir	19.00
E 7	1082	Andrew J. Wright et ux	52.00
G 10	1083	David Whiting Est.	60.00
J 5	1084	William R. Young et al	15.00
E 6	1086	Walker J. Garnett et ux	69.00
F 8	1087	Mary A. Lee et vir	27.00
F 8	1088	Geo. R. Lumpkin, et al	25.00
E 7	1089	Ruth R. Powers, Admrx.	25.00
F 6	1095	Missie Byrd Vaughan et vir	10.00
H 10	1110	Martha S. Boyle et vir	525.00
J 7	1111	Emma Lee et al	6.20
F 7	1112	William Thomas Lumpkin et ux	64.00
H 8	1114	Mary C. Smith, et al	205.00
H 4	1115	Dorothy Fisher Smith	12.00
F 4	1118	Nora T. Wright et vir	5.00
H 6	1119	Leticia Young	37.25
G 9	1122	Bagby Chinault et ux	12.00
G 9	1123	French Chinault et ux	6.70
B 2	1124	James E. Carlton et ux	196.00
F 9	1125	Ruth Farmer et vir	6.00
G 9	1127	Charles Pearson Est.	55.00
G 7	1133	Wade Jackson Est.	12.00
F 6	1136	Isabel Lumpkin et al	11.00
D 7	1138	H. V. Chinault et ux	3.00
F 7	1139	William H. Morton et ux	23.50
F 8	1144	Ruth R. Powers, Admrx.	50.00
H 6	1167	Caroline County School Board	1.00
F 5	1168	John Morton Est.	25.00
H 7	1172	Robert Bundy et al	22.00
H 6	1173	Thomas B. Vessels Est.	18.30
G 6	1192	Frank B. Beazley et ux	31.50
G 5	1193	Martha S. Boyle et vir	134.00
H 7	1194	David Broaddus et al	16.50
G 7	1195	Edward Brown Est.	16.70
F 5	1196	R. C. Carter et ux	1.00
J 6	1201	Lawrence Jackson Est.	10.00
J 6	1202	Mary E. Ware et vir	27.00
F 8	1204	Alice Morton	27.80
G 8	1205	Henry W. Morton	30.00
H 7	1206	Henry W. Morton	8.00
H 7	1208	Jenetta P. Perry	26.00
F 10	1209	Arthur Pitts et ux	18.00
F 10	1210	Mortimore Pitts	35.00
F 10	1211	Mortimore Pitts	18.00
J 6	1212	Rapp. Liberty Baptist Church	1.00
H 7	1215	Ruth R. Powers, Admrx.	5.60
G 6	1216	William Rich Est.	10.00
F 6	1217	James H. Wright, Sr., Est.	18.00
G 5	1218	Dorothy Fisher	141.00
H 5	1219	Melinda Sydnor et vir	35.50
H 6	1220	Ida Turner Mercer et vir	5.00
F 3	1221	Robert G. Pitts et al	1.00
G 6	1223	Albert Whiting Est.	4.00
J 6	1224	John Willis Est.	5.00
J 6	1225	Sarah Williams et vir	2.00
J 6	1226	Sarah Williams et vir	1.00
E 7	1227	James H. Wright, Sr. Est.	23.50
J 6	1228	Mary E. Young et al	1.00
J 6	1229	Mary E. Young et al	6.50
H 7	1230	Robert M. Morton	6.40
J 6	1232	Lawrence Jackson Est.	4.00
J 6	1233	Lawrence Jackson Est. et al	20.00
J 6	1236	Florence Bromskin	1.25
E 8	1238	Patsy Garnett et al	40.80
F 11	1239	Sarah J. Johnson et al	35.00
F 11	1240	Walter Lindsey Est.	56.50
F 11	1241	William R. Hale et al	33.50
F 8	1242	George Whiting et ux	25.00
J 6	1250	William R. Young	15.00

NOTE:
Cemeteries are Indicated Thus ■

AUDITED NO. 4650

*Now Under Jurisdiction Of Norfolk District.
RETURNED TO BALTO. DIST. 7-1-70
" " NORFOLK DIST. 12-1-73

FINAL PROJECT OWNERSHIP
(TYPE OF MAP)

STATE: VIRGINIA
COUNTY: CAROLINE
DIVISION: NORTH ATLANTIC
DISTRICT: *BALTIMORE
ARMY AREA: FIRST
USING AGENCY: DEPT OF THE ARMY
20 MILES SE OF FREDERICKSBURG
1 MILE E OF BOWLING GREEN

TRANSPORTATION FACILITIES

RAILROAD: R.F.&P. RR.
STATE ROAD: 2, 207, 301
FEDERAL ROAD: 17
AIRLINE:

LAND AREA

ACRES OWNED BY W.D.:
ACRES LEASED BY W.D.: SEE SHEET #1
ACRES LEASED FROM W.D.:
ACRES TRANSFERRED TO W.D.:
ACRES DONATED TO W.D.:

DISPOSALS

ACRES SOLD:
ACRES TRANSFERRED:
ACRES EXCHANGED:
ACRES OTHERWISE:

LEGEND

RESERVATION LINE
STATE OR PROVINCE LINE
COUNTY LINE
CIVIL DISTRICT PRECINCT
LAND-GRANT LINE
CITY, VILLAGE, OR BOROUGH
CEMETERY, SMALL PARK, ETC.
TOWNSHIP LINE
SECTION LINE

Scale
SCALE: 1" = 1/4 MILE
1/4 1/8 0 1/4 1/2 3/4 1

WAR DEPARTMENT, O.C.E.
CONSTRUCTION DIVISION

REAL ESTATE
FORT A.P. HILL
MILITARY RESERVATION

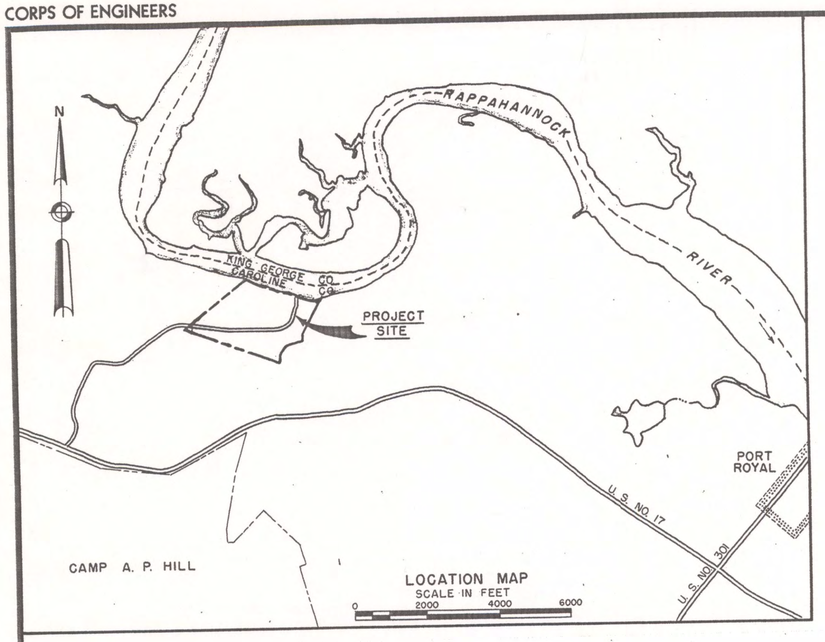
RECOMMENDED: John W. Powell, ASSOCIATE ENGINEER — DATE 12 Oct. 1945
APPROVED: [signature], LT.COL., CORPS OF ENGINEERS — DATE 16 Oct. 1945

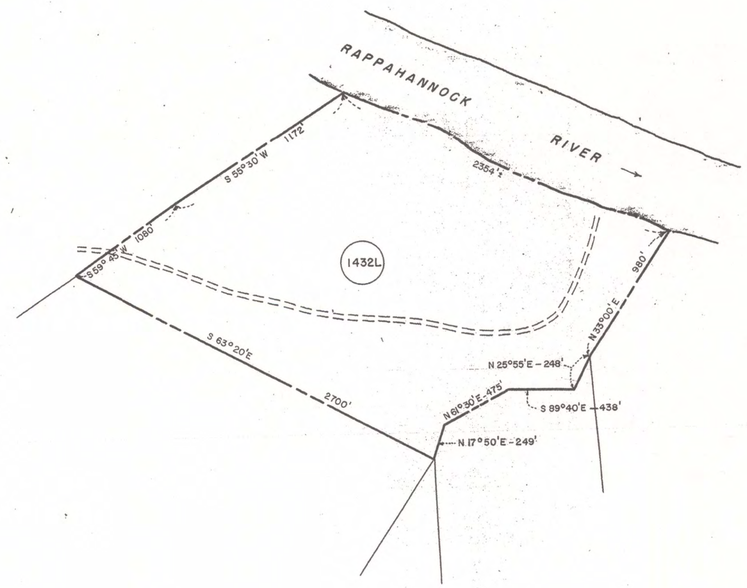
COMPILED: G.E.G. TRACED: G.E.G. CHECKED:

DATE	BY	REVISIONS	APPROVED
1-29-75	RWH	NAME CHANGED FROM CAMP, BY G.O. 45	
18 DEC. '62	F.P.W.	DUE TO FINAL AUDIT	
13 DEC. '61	F.P.W.	DIST. DESIGNATION CHANGED FROM WASH. TO BALTIMORE	
11 APR. '55	K.M.M.	TRACT LOCATIONS ADDED.	

SHEETS: 7 OF 8 DRAWING NO. M & D 15

CORPS OF ENGINEERS





Note:
The boundary of this installation was compiled from survey plat.

TRACT REGISTER OF ACQUISITION AFTER 1 JULY 1940 (MILITARY)

TRACT NO.	LAND OWNER	ACREAGE FEE	ACREAGE TRANS	ACREAGE LICENSE	REMARKS
1432 L	W. T. HICKS, JR.			111.30	LICENSE NO. 023-165 DTD. 16 AUG. 1968 EFF. 1 SEPT 1968 THRU 30 JUNE 1973 *, **

* FORMERLY OCCUPIED UNDER ONE YEAR LICENSE AGREEMENT DATED 27 AUG. 1961 WHICH WAS OBTAINED LOCALLY; & LICENSE NO. 023-62 DTD. 5 SEPT. 1962 EFF. 1 SEPT. 1962 THRU 31 AUG. 1968.

** Superseded by license no. DACA65-9-74-1 dated 12 April 1974, eff. 1 April 1974 thru 30 June 1979.

STATE INDEX

VICINITY MAP
STATUTE MILES
0 5 10 20

ACQUISITION AUTHORIZATION

Letter, Hdqtrs, 2nd. U. S. Army to N.D. dtd. 10 Aug. 1962

FINAL

PROJECT MAP

AGENCY: DEP'T OF THE ARMY
STATE: VIRGINIA
COUNTY: CAROLINE
DIVISION: NORTH ATLANTIC
DISTRICT: NORFOLK TO BALTO. DIST. 7-1-70; TO NORFOLK DIST. 12-1-73
ARMY AREA: FIRST

LOCATION OF PROJECT

15 MILES S.E. OF CITY OF FREDERICKSBURG
MILES OF

TRANSPORTATION FACILITIES

RAILROADS: R.F. & P.
STATE ROADS:
FEDERAL ROADS: 17, 301
AIR LINES:

ACQUISITION

TOTAL ACRES ACQUIRED: SEE SHEET 1
ACRES FEE:
ACRES TRANSFERRED:
ACRES LEASED:
ACRES LESSER INTERESTS

DISPOSAL

TOTAL ACRES DISPOSED OF:
ACRES SOLD:
ACRES TRANSFERRED:
ACRES LEASES TERMINATED:
ACRES LESS. INT'S. TERMINATED
ACRES REASSIGNED:
ACRES TO

LEGEND

EXCEPT FOR THE SPECIAL SYMBOLS SHOWN BELOW, MAP SYMBOLS ARE STANDARD IN ARMY MAP SERVICE TECHNICAL MANUAL NO. 23.

RESERVATION LINE
RESERVATION LINE (Actual Survey)
TRACT BOUNDARY LINE
TRACT NUMBER
AVIGATION EASEMENT
CONTOUR LINE
DISPOSAL

DATE	REVISIONS	BY
1-29-75	NAME CHANGED FROM CAMP, BY G.O. 45	RWH
5-10-74	LICENSE RENEWAL	R.W.H.
8-22-68	LICENSE RENEWAL	H.R.W.
12-18-62	DUE TO FINAL AUDIT. REVISED TRACT NO. & DRAWING NO.	S.S.W.

CORPS OF ENGINEERS, U.S. ARMY
NORTH ATLANTIC DIVISION, NORFOLK DISTRICT
NORFOLK, VIRGINIA

DRAWN BY: W. T. C.
TRACED BY: W. T. C.
CHECKED BY: J. G. O.
SUBMITTED BY: John G. Owens, CHIEF, P & C BRANCH
RECOMMENDED BY: J. Ernst, CHIEF, REAL ESTATE DIVISION
APPROVED BY: R. H. Fox, COL., CORPS OF ENGINEERS, DISTRICT ENGINEER — DATE 30 Oct. 1962

REAL ESTATE
FORT A. P. HILL
(FLOAT BRIDGE TRAINING AREA)
MILITARY RESERVATION

OFFICE, CHIEF OF ENGINEERS, WASHINGTON 25, D. C.
AUDITED
INSTALLATION OR PROJECT NO. 4650

Scale 1" = 500' (500' 0 500' 1000')
SHEET 8 OF 8 | DRAWING NO. M.A.D. 15

APPENDIX U

Cultural Resources Database on DVD

APPENDIX E – FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN
(AS REDACTED TO COMPLY WITH OPERATIONAL SECURITY REQUIREMENTS)

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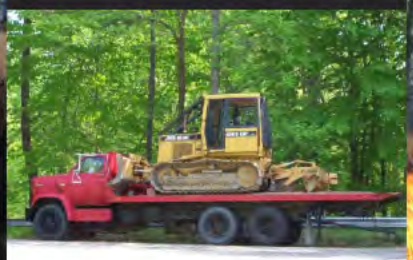
DRAFT

Fort A.P. Hill

Integrated Wildland Fire Management Plan



August 2012

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DOCUMENTATION CONTROL PAGE

Fort A.P. Hill – Environmental Management System

Environmental and Natural Resources Division
Directorate of Public Works
Fort A.P. Hill

Originating Office: DPW-ENRD	**Review Frequency:** Annually

Document Title:

Fort A.P. Hill Integrated Wildland Fire Management Plan (IWFMP)

The IWFMP is prepared IAW AR 420-1, *Army Facilities Management*, (12 February 2008) - Ch. 25 Fire and Emergency Services, AR 200-1 *Environmental Quality – Environmental Protection and Enhancement* (December 2007), and the Army Memorandum on *Army Wildland Fire Policy Guidance* (September 2002).

The IWFMP was developed to provide direction, continuity, and operational procedures in relation to the wildland fire management activities on Fort A.P. Hill. This plan provides for programmatic safety and effectiveness, establishes roles and responsibilities for integration of directorates and reflects the policies established in the Installation Emergency Management Plan (IEMP). The IWFMP addresses fire use for land management and assists in mitigating interruptions to training operations caused by fire. The plan identifies resources, safety considerations and responsibilities for both wildfire incident response and prescribed burning operations.

This plan is to be tested twice annually and updated procedural or supporting document changes. A thorough review and revision will occur every five years.

Document No: FOR-002-02

Document Organization Owner: DPW – ENRD – FORESTRY	**Prepared By:** Anne J. Ulrey, CTR	**Revision Date:** xx-08-2012
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Fort A.P. Hill

Integrated Wildland Fire Management Plan

Directorate of Public Works
Environmental and Natural Resources Division

August 2012

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Prepared by: Fort A.P. Hill
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Integrated Wildland Fire Management Plan
U.S. Army Garrison Fort A.P. Hill

Prepared by:
Directorate of Public Works
Environmental and Natural Resources Division
Forestry Branch
Fort A.P. Hill, Virginia

August 2012

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EXECUTIVE SUMMARY

INTRODUCTION

This Integrated Wildland Fire Management Plan (IWFMP) is prepared in accordance with Army Regulation (AR) 420-1, *Fire and Emergency Services* (12 February 2008), AR 200-1, *Environmental Quality – Environmental Protection and Enhancement* (December 2007), and the Army Memorandum on *Army Wildland Fire Policy Guidance* (September 2002). Implementation of these regulations and guidelines are necessary to address safety, land management, and environmental compliance of the wildland fire management program on Fort A.P. Hill.

PURPOSE AND NEED

Wildland fires occur as a matter of routine on most Department of Defense (DoD) lands, including Fort A.P. Hill, where live-fire weapons training or training exercises using pyrotechnics frequently occur. Consequently, prescribed burning and wildfire suppression are two activities that occur routinely on Fort A.P. Hill for land management and resource protection purposes. These operations are conducted jointly with personnel from the Directorate of Public Works (DPW) Environmental and Natural Resources Division (ENRD) Forestry Branch and Fish and Wildlife Section, DPW Roads and Grounds, the Directorate of Emergency Services (DES) Fire Department and the Directorate of Plans, Training, Mobilization, and Security (DPTMS) Range Control and Emergency Management personnel.

Coordination of efforts in the application of fire as a land management tool and the control of fire unintentionally ignited on the installation is required to ensure safety, efficiency, and resource protection. The IWFMP was developed to provide direction and continuity and to establish operational procedures to guide all wildfire management activities on Fort A.P. Hill for programmatic safety and effectiveness. The IWFMP presents the actions that will assist in the mitigation of interruptions to training operations caused by fire and will integrate wildland fire management within Fort A.P. Hill's natural resource management. The responsibilities and procedures outlined in this plan are intended to streamline management activities and incident response by establishing agreement and understanding between multiple directorates and other stakeholders.

SCOPE AND AUTHORITY

This plan applies to all personnel who work, live, and train at Fort A.P. Hill and are directly involved with wildland fire management on the installation.

The Garrison Commander has overall authority for implementation of the IWFMP per AR 200-1.

Fort A.P. Hill wildland fire program management is a shared responsibility between DES and DPW. Both DES, Fire Department's Fire Chief and DPW, Forestry Branch's Installation Forester will have authority and leadership positions related to wildfire response and prescribed burning. As a general rule, the Fire Chief will operate as the Incident Commander (IC) in relation to wildfire response, suppression activities, and related decisions. Likewise, the Installation Forester will make all operational decisions regarding the planning and implementation of prescribed burns and operate as, or designate, the on-site Prescribed Burn Boss. These responsibilities include prescribed burn plan development, prescription approval, and the completion and updating of this plan. Decisions on strategy, personnel and resource placement and use, and fire impacts may be made cooperatively on any wildland fire incident as needed.

This plan requires annual updates to capture changes in procedures, qualified personnel, and available wildland fire equipment and other resources. This plan will require a five-year revision in 2016 to update the overall installation wildland fire management program intent and approach.

WILDLAND FIRE MANAGEMENT - GENERAL

This portion of the IWFMP addresses areas of wildland fire management that are applicable to wildfire response and prescribed burn programs and procedures.

The *Army Wildland Fire Policy Guidance*, AR 200-1 and other federal and Army regulations guide installations to consider the environmental and military mission impacts of all wildland fire activities, wild or prescribed. The IWFMP addresses ecosystem disturbances, both beneficial and detrimental, smoke management techniques and air quality impacts, cultural resource awareness, threatened and endangered species requirements, and the managed training setting. Environmental considerations also incorporate real property considerations when conducting prescribed burns or suppressing wildfires near facilities. Guidelines that focus on the use and suppression of wildland fire in relation to each of these features are addressed in the IWFMP. Mission considerations including management of the training landscape (missionscape), scheduling, the use of munitions and incendiary devices, unexploded ordnance, and the presence of tenant units are also addressed.

Extensive notification procedures are in place to inform, educate, and alert Fort A.P. Hill personnel and the public of impending or active wildland fire activities. These include press releases, social media announcements, Caroline Alert System, the AtHoc system, and phone calls or electronic mail communication. The procedure and expectations for the use of public notification in relation to wildland fire and smoke are outlined in this plan.

Due to the complexity of fire behavior and the unpredictability of influence from weather, firefighters need both classroom and experiential training to perform their duties knowledgably and safely. The basic components of fire fighter training will be acquired and maintained by fire response personnel at Fort A.P. Hill. The purpose of this section is to present all required and recommended training to levels exceeding minimum requirements as established by the, U. S. Army, National Wildfire Coordinating Group, or Fort A.P. Hill Command. This section addresses certification types, training opportunities and physical fitness standards.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

PRESCRIBED BURNING

Fort A.P. Hill conducts large-scale (15-20,000+ acres) prescribed burning on an annual basis to decrease the fuel hazards in order to reduce fire risk. Reduction of wildfire occurrence results in decreased range shut-down and optimizes live-fire training availability on the installation. Prescribed fires also create more open understory conditions improving forest setting accessibility and maneuverability of military units during training operations. The Forestry Branch also conducts prescribed burning in conjunction with silvicultural activities such as site preparation following a timber harvest, to control hardwood encroachment in pine stands, or to foster oak regeneration in hardwood stands. Additional ecological benefits of prescribed burning include nutrient recycling, herbaceous vegetation re-growth and establishment, and a reduction in understory density to benefit wildlife habitat. However, military training needs and land use requirements constitute the driving force behind the application of wildland fire management on this landscape and the need for this plan.

The Installation Forester is the Prescribed Fire Program Manager in relation to prescribed burn planning, decisions, coordination, implementation, and monitoring. This portion of the plan describes the procedures required for planning, prescribing, preparing, executing, and evaluating prescribed burns.

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Appendix H Work Capacity Test Documents

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Appendix M [redacted]

Appendix N [redacted]

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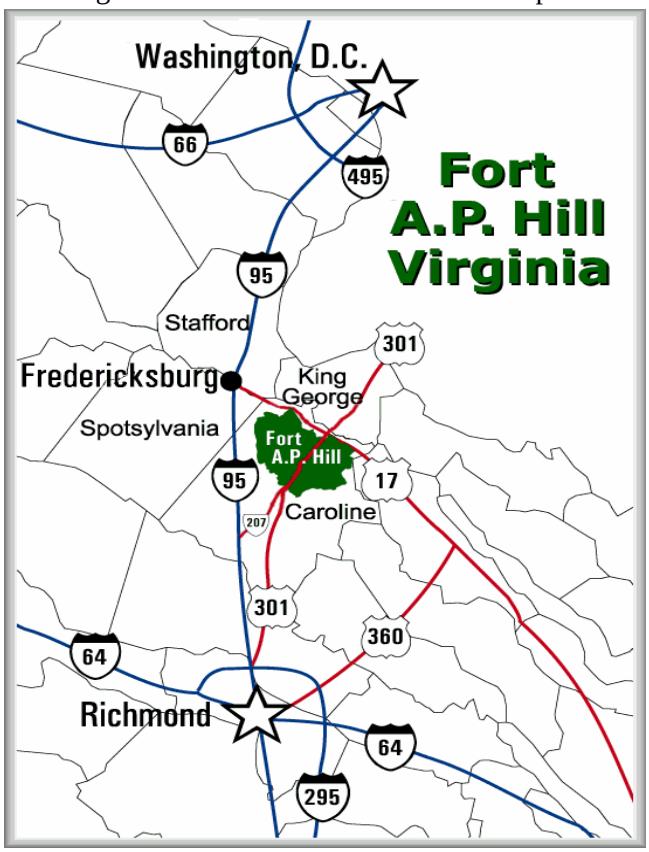
Appendix S Integrated Wildland Fire Management Plan Annual Review Requirements

1.0 WILDLAND FIRE MANAGEMENT - GENERAL

1.1 INTRODUCTION

Fort A.P. Hill is a 75,794-acre (30,686-ha.) United States Army installation located in Caroline County, Virginia, situated between the metropolitan areas of Richmond and Washington, D.C. (Figure 1-1). Fort A.P. Hill is the sixth largest Army installation east of the Mississippi River consisting of a 27,000-acre live fire Range Complex and approximately 49,000 acres of non-live fire maneuver training areas (MTA). The installation serves as a year-round training facility for active and reserve Army components, other Department of Defense (DoD) service branches and federal law enforcement to meet its mission of providing realistic joint and combined arms training, logistics and support, enabling America's defense forces to win on twenty-first-century operational environment. US route 301 bisects the installation into north and south areas. Situated within the southeastern coastal plain, the terrain varies from 9 feet (2.7 m) to 223 feet (68 m) above mean sea level, resulting in flat or rolling areas across much of the installation.

Figure 1-1. Fort A.P. Hill Location Map



1.2 NEED AND PURPOSE OF THIS PLAN

Wildland fires occur as a matter of routine on most DoD lands where live-fire weapons training or training exercises using pyrotechnics occur. Consequently, many DoD lands rely on prescribed burning programs to manage their lands as the primary tool for wildland fuel reduction. Prescribed burning and wildfire suppression are two activities that occur routinely on Fort A.P. Hill for land management and resource protection purposes. These operations are conducted jointly with personnel from the Directorate of Public Works (DPW) Environmental and Natural Resources Division (ENRD) Forestry Branch, the Directorate of Emergency Services (DES) Fire Department, DPW Roads and Grounds, the Directorate of Plans, Training, Mobilization, and Security (DPTMS) Integrated Training Area Management (ITAM) program, and DPTMS, Range Control.

Coordination of efforts in the application or control of fire is a fundamental requirement to ensure safety, efficiency, resource protection, and successful accomplishment of land management goals. The Integrated Wildland Fire Management Plan (IWFMP) was developed to establish operational procedures to guide all wildfire management activities on Fort A.P. Hill. This plan also directs the application of wildland fire for proper natural resources management under the requirements of Army Regulation (AR) 200-1 and the installation Integrated Natural Resources Management Plan (INRMP). The responsibilities and procedures outlined in this plan are intended to streamline management activities and incident response by establishing agreement and understanding regarding roles, responsibilities, and procedures between involved directorates.

This plan requires annual updates to capture changes in procedures, qualified personnel, and available wildland fire equipment and other resources. This plan will require a five-year revision in 2016 to update the overall installation wildland fire management program intent and approach. Versions of this plan will be tracked through the installation Environmental Management System (eMs) document control process.

1.3 APPLICABLE LAWS, REGULATIONS, AND OTHER GUIDELINES

Federal Wildland Fire Management Policy (2001 Review and Update)

DoD Instruction 4715.3, 18 March 2011, *Natural Resource Conservation Program*

DoD Instruction 6055.6, 10 October 2000, *DoD Fire and Emergency Service Program*

Defense Finance Accounting Service, Indianapolis Regulation 37-1, January 2000, *Finance and Accounting Policy Implementation*

Department of Defense Financial Management Regulation 7000. March 1997

AR 200-1, 13 December 2007, *Environmental Quality - Environmental Protection and Enhancement*

AR 420-1, 12 February 2008, *Army Facilities Management* - Chapter 25, Fire and Emergency Services

AR525-27, 13 March 2009, *Army Emergency Management Program*

Army Memorandum, 4 September 2002, *Army Wildland Fire Policy Guidance*

Army Memorandum, 3 August 2005, *Prescribed Burning of Earth Covered Magazine (ECM) Vegetation*

Product Management System (PMS) 310-1/National Fire Equipment System (NFES) 1414, 21 November 2011, *National Wildland Fire Coordinating Group* (NWCG) *Wildland Fire Qualifications Subsystem Guide*

Virginia's Forestry Best Management Practices for Water Quality, 2011

Virginia forestry laws concerning forest fire law and penalties and certified prescribed burn manager law (Virginia Department of Forestry (VDOF), Publication #2, Revised 2005)

Fort A.P. Hill Installation Emergency Management Plan, 2011

Fort A.P. Hill Integrated Natural Resources Management Plan, 2007

1.4 ROLES AND RESPONSIBILITIES

This plan applies to all personnel who work, live, and train at Fort A.P. Hill and are directly involved with wildland fire management on the installation. The following describes specific roles and responsibilities ascribed to individual positions within the Fort A.P. Hill organizational structure as specifically related to the implementation of this plan in accordance to established regulations.

Garrison Commander –

- Designate the garrison Wildland Fire Program Manager.*
- Approve the Integrated Wildland Fire Management Plan.*
- Establish a method for commercial procurement of meals and supplies in emergency situations.*
- Review annual prescribed burn plans.
- Serve as approving agency administrator on all prescribed burns with an "Extremely High" risk rating.
- Serve as approving agency administrator on prescribed burns in the event the Fire Department is unable to provide on-scene support.

  * *As indicated in AR 420-1*

Director, Emergency Services –

- Review and implement the approved IWFMP.
- Review annual prescribed burn plan.
- Provide police support as needed for wildland fire events.
- Provide dispatch services as needed for wildland fire events.

Director, Public Works –

- Review and implement approved IWFMP.
- Review annual prescribed burn plans.
- Serve as approving agency administrator on Forestry or Wildlife proponent prescribed burns with a "Moderate" risk rating.
- Ensure personnel associated with wildland fire are appropriately trained and equipped.

Director, Plans, Training, Mobilization, and Security –

- Review and implement approved IWFMP.
- Review annual prescribed burn plans.
- Serve as approving agency administrator on Range Control and ITAM proponent burns with a "Moderate" risk rating.
- Maintain the installation Emergency Management Plan and coordinate related items and update requirements.

Resource Management Officer –

- Provide guidance and oversight for the Fort A.P. Hill resource management program and ensure compliance with known laws, regulations, and guides.
- Present current resource amount to include personnel, equipment, and funds to match those against the courses of action identified in the emergency response plan
- Assess resource requirements to determine if an internal reallocation of finding is appropriate and feasible. Make recommendation for internal reallocation to the Garrison Commander.

- Recommend priorities for resource requirements to the Garrison Commander.
- Based on Garrison Commander guidance, allocate monies for supplies, service, or equipment for emergency response activities.
- Identify correct appropriation and funding amounts for planned and current emergency response activities.
- Develop and implement procedures to capture emergency response expenses during all phases of response.
- Assist garrison directorates and staff offices in the development of resource requirements using approved tools and processes and ensure requirements are properly documented, prioritized and justified.
- Use local reporting mechanism to submit funding requirements and requests through approved processes. Submit Unfinanced Requirements (UFRs) to the higher headquarters, as required.
- Make recommendations to the Garrison Commander on use of funds obtained through the UFR process.
- Report the cost, schedule and project status for emergency response to the installation commander and higher headquarters as required.
- Represent the Resource Management Office at all emergency response meetings.

Chief, Fire and Emergency Services –

- Review and implement approved IWFMP
- Provide Wildland Fire Program Management as the Wildfire Program Manager in all matters related to wildfire response and suppression activities and strategies
- Ensure all personnel involved with wildland fire meet all certification and physical requirements as established by guiding policies, regulations and related standards
- Determine and maintain appropriate resourcing of wildland fire related equipment, personal protective equipment (PPE) and specialized vehicles
- Provide emergency response and dispatch services for wildland fire
- Assess wildland fire risks related to installation and tenant facilities
- Report wildfire location and extent to Forestry Branch for burned acreage tracking and reporting purposes
- Review annual prescribed burn plans
- Issue Hot-Work Permits for all appropriate and approved activities occurring on the installation, including prescribed burns and other open burning activities
- Serve as approving agency administrator on all prescribed burns with a “High” risk rating
- Provide prescribed burn support when resources are available

Chief, Environmental and Natural Resources Division –

- Review and implement approved IWFMP
- Ensure appropriate application of National Environmental Policy Act (NEPA) requirements in relation to wildland fire
- Review annual prescribed burn plans
- Serve as approving agency administrator on Forestry or Wildlife proponent prescribed burns with a “Low” risk rating
- Provide for evaluation of wildfire suppression areas to determine site rehabilitation requirements

Installation Forester, Environmental and Natural Resources Division, Forestry Branch –

- Provide for Wildland Fire Program Management as the Prescribed Burn Program Manager in all matters related to prescribed burn activities and strategies
- Develop, review, update and implement the IWFMP
- Develop appropriate NEPA analyses and documents in relation to the prescribed burn program
- Ensure all personnel involved with prescribed burning meet all certification and physical requirements as established by guiding policies, regulations and related standards
- Determine and maintain appropriate resourcing of prescribed burning related equipment, PPE and specialized vehicles
- Monitor wildland fire results to determine objectives met or impacts to the ecosystem as through photo point monitoring, or composite burn index, other surveys
- Track all wildland fire occurrences that occur on the installation, wild or prescribed, in the geographic information system (GIS) and provide updates through the intranet
- Provide wildfire response assistance as requested as a subject matter expert, or in the form of personnel and/or equipment as needed

Range Control Officer, Directorate of Plans, Training, Mobilization, and Security –

- Review and implement approved IWFMP
- Provide five-year prescribed burn request estimates for long-term planning and NEPA documentation
- Provide prescribed burning request inputs for annual work plan development
- Review annual prescribed burn plans
- Ensure all personnel involved with wildland fire meet all certification and physical requirements as established by guiding policies, regulations and related standards
- Ensure all personnel with wildland fire duties have appropriate PPE and that equipment is operation and on-call during fire and prescribed burn season
- Coordinate scheduling of all requested prescribed burns
- Assist with site preparation and resource protections needs prior to prescribed burn implementation within the Range Complex
- Ensure all fires occurring in the Range Complex or Training Areas are reported to Fort A.P. Hill dispatch
- Report wildfire extents to Forestry Branch for GIS documentation and reporting
- Serve a approving agency administrator on Range Control and ITAM proponent burns with a “Low” risk rating.

Supervisor, Directorate of Public Works, Roads and Grounds Branch –

- Review and implement approved IWFMP
- Review annual prescribed burn plans
- Ensure all personnel involved with wildland fire meet all certification and physical requirements as established by guiding policies, regulations and related standards
- Ensure all personnel with wildland fire duties have appropriate PPE and that equipment is operational and on-call during fire and prescribed burn season
- Provide for site rehabilitation as needed

Public Affairs Officer

- Review and implement approved IWFMP.
- Administer public notification procedures for prescribed burning and emergency notifications.
- Provide for public education in relation to the benefit and risks associated with wildland fire.

Though the installation Fire Chief has overall responsibility of fires that occur on the installation, due to the nature of wildland fire, the intricacies of the prescribed burning program, and the high dependence on prescribed fire as a land management tool, the Garrison Commander supports joint responsibility between DES-Fire Department and the DPW-ENRD Forestry Branch. Therefore, the wildland fire program management on Fort A.P. Hill is a shared responsibility between DES and DPW. Both DES – Fire Department's Fire Chief and DPW- Forestry's Installation Forester will have authority and leadership position related to wildfire response and prescribed burning; however, only one individual will be identified as the on-site leader for any given event.

As a general rule, the Fire Chief will operate as the Wildfire Program Manager and the Incident Commander (IC) in relation to wildfire response, suppression strategies, personnel and resource placement, fuel and weather evaluations, resource protection, and related decisions. Likewise, the Installation Forester will operate as the Prescribed Burn Program Manager and the Prescribed Burn Boss in relation to prescribed burning activities, including prescribed burn plan development, notifications, prescription approval, risk and complexity assessments, ignition and holding strategies, personnel and equipment requirements, and contingency planning. Any resulting changes in strategy occurring on a wildland fire, that need to be carried out by wildland fire personnel, will be communicated to those personnel by the recognized on-site leader (i.e., the IC on a wildfire or the Burn Boss on a prescribed burn). Any change in leadership responsibility on an event will be clearly communicated to all on-site personnel. This will ensure that the IC or Burn Boss has full situational awareness and can direct actions that ensure the safety of personnel. In addition, any wildland fire personnel working on a prescribed burn or wildfire incident has the authority and responsibility to communicate concerns or observations of fire behavior to their on-site Senior Fire Officer (SFO) who will then communicate with the IC or Burn Boss for responsive action.

1.5 GOALS AND OBJECTIVES

The IWFMP will support the installation mission and responsibilities identified in the INRMP through the following goals and objectives:

Goal: PROTECTION

G1) Implement wildfire prevention and suppression measures to protect human life, property, installation mission completion, natural resource assets, and special ecological environments on Fort A.P. Hill from unwanted fire damage.

Objectives:

G1 – O1) Have no injuries, deaths, property losses, road closures, or undesired ecological damage resulting from wildland fire or smoke.

G1 – O2) Cause no off-post damage to private lands resulting from escaped prescribed burns or wildfires along the installation boundary.

G1 – O3) Conduct annual prescribed burns on the Range Complex during the dormant season to reduce the loss of training time due to wildfire-related range shutdowns.

G1 – O4) Ensure Range Control, Fort A.P. Hill tenant organizations and training units are aware of the daily Fire Spread Index, Wildfire Hazard Rating and resulting munitions utilization guidelines.

G1 – O5) Protect all natural and cultural resources, to the extent feasible, through a program of resource awareness, fire prevention, low-impact suppression, and post-action restoration.

[redacted]

G1 – O8) Maintain an installation firebreak system that can be utilized to access and protect identified real property, natural and cultural resources, and adjoining private lands.

G1 – O9) Conduct an annual firebreak system evaluation to determine status, maintenance requirements (stabilization, seeding, etc.), and gaps.

G1 – O10) Ensure garrison leadership is well advised of the IWFMP requirements, potential annual wildland fire threats/risks, multi-day or multi-agency events logistics, or other wildland fire requirements for appropriate budgeting and program funding.

Goal: LANDSCAPE MANAGEMENT

G2) Use fire as a landscape management tool to support installation land management plans by enhancing military training mission flexibility and allowing fire, a recognized natural source of ecological balance, to fulfill its role and accomplish natural regeneration and vegetation management objectives.

Objectives:

G2 – O1) Reduce understory densities in forested areas to improve accessibility and the quality of training lands within the installation to allow tenant and visiting military units to maintain a high level of combat readiness.

G2 – O2) Conduct site preparation burns one to two years post-harvest to reduce logging debris, improve accessibility and prepare the seed bed for regeneration.

G2 – O3) Utilized prescribed burning to help create and maintain the desired off-road maneuver network across the installation.

G2 – O4) Utilize prescribed burning to favor oak regeneration establishment and to manage fire-maintained, early-successional wildlife conservation planting areas.

G2 – O5) Use established methodologies to conduct annual burn program monitoring to document vegetative response to wildland fire including native and non-native species. Summarize and report results annually.

G2 – O6) Conduct annual reviews of the installation land management plans, including, but not limited to the INRMP, Integrated Vegetation Management Plan, Endangered Species Management Plan(s), and Integrated Pest Management Plan to incorporate management goals into the wildland fire program.

G2 – O7) Coordinate with the installation Range Control Officer and ITAM personnel to determine areas on the installation to be fire-maintained and incorporate into the annual prescribed burn plan.

G2 – O8) Coordinate with Fish and Wildlife program managers to create a fire-maintained habitat regime encouraging native vegetation and improving rare wildlife habitats for ground-nesting birds.

Goal: INCIDENT MANAGEMENT

G3) Efficiently contain each wildfire occurring on the installation through effective cross-directorate/agency communication, operational-ready equipment, technology and personnel, and appropriate span of control for the incident commander and delegates.

Objectives:

G3 – O1) Establish a National Incident Management System (NIMS) -compliant Incident Command System (ICS) for each wildfire event meeting established criteria for ICS implementation.

[redacted]

G3 – O4) Evaluate current weather station status, information retrieval process, information sharing potential and update potential by FY 2013.

G3 – O5) Perform and document required annual maintenance on all Fort A.P. Hill-owned weather stations.

[redacted]

G3 – O7) Evaluate fire modeling and enterprise incident management decision support systems or other tools for more effective incident management and fire and resource tracking abilities.

G3 – O8) Use geographic positioning system (GPS) technology to record the boundaries of wildfires within 72 hours of the conclusion of the incident.

G3 – O9) Evaluate any resource impacts that may have occurred from suppression activities, such as plow lines with erosion potential or cut fence lines, within 72 hours of the event, and mitigate identified damages as soon as feasible.

G3 – O10) Evaluate all wildland fire tools and equipment for operational readiness prior to the start of each annual burn season and inform the installation Fire Chief if significant equipment (e.g., dozers, graders, etc.) is not operational.

G3 – O11) Document each wildfire and prescribed burn activity involving Fire Department personnel in the National Fire Incident Reporting System (NFIRS) including damage/loss assessments.

G3 – O12) Investigate each reported wildfire to establish ignition location and source.

[redacted]

Goal: SAFETY

G4) Above all else, provide for firefighter, military personnel, and public safety.

Objectives:

G4 – O1) Maintain fire management qualifications for all firefighters and fire managers and ensure all personnel assigned to those positions are trained to a level appropriate for their expected duties.

G4 – O2) Develop mechanism for continued firefighter education as through training memorandums of understanding with United States Forest Service (USFS) and VDOF to ensure availability of high-quality training to meet NWCG standards.

G4 – O3) Ensure wildland fire Job Hazard Analyses and Risk Assessments are reviewed and updated annually.

G4 – O4) Complete a Site Safety and Health Plan for prescribed burn personnel prior to the fall and spring burn seasons.

G4 – O5) Ensure personnel are issued appropriate wildland fire PPE and that all wildland fire vehicles and equipment are in proper working order.

G4 – O6) Engage Range Control and the Range Facility Management Support System (RFMSS) and the Fort A.P. Hill Fire Desk to ensure no personnel are within prescribed burn areas and that ranges go into cease-fire as needed for wildfire response personnel.

G4 – O7) Inform Virginia Department of Transportation (VDOT) if hazardous travel conditions exist or are expected to occur, as due to smoke, on surrounding public roadways.

G4 – O8) Post signs along highly-travelled installation roadways to warn travelers of potential smoke during prescribed burn operations.

G4 – O9) Utilize established smoke management techniques to minimize the number of prescribed burns generating smoke complaints.

G4 – O10) Evaluate the incorporation of complexity ratings of each prescribed burn plan site to determine appropriate staffing and qualifications of participating personnel by 2015.

G4 – O11) Maintain accountability of all personnel involved with each prescribed burning or wildfire response.

G4 – O12) Ensure each prescribed burn has a documented Hot-Work permit prior to implementation/ignition.

G4 – O13) Conduct safety briefings and provide summary pocket cards prior to each prescribed burn activity.

G4 – O14) Evaluate and assign a centralized wildland fire training and qualifications tracking entity for non-DES Fire Department personnel involved in wildland fire.

Goal: PUBLIC AWARENESS

G5) Enhance general public awareness and understanding of wildland fire occurring on the installation.

Objectives:

G5 – O1) Coordinate with the installation Public Affairs Office (PAO) prior to each burn annual burn season to produce an informational article summarizing the Fort A.P. Hill wildland fire program for publication in local periodicals.

G5 – O2) Distribute messages to the public through the Caroline Alert or other reverse-911 notification system to advise of prescribed burn or wildfire activities that may produce smoke impacts.

G5 – O3) Use the AtHoc network-centric mass-notification system, intranet and internal electronic mail system to inform installation personnel, tenants, contractors, and training units of prescribed burn or wildfire activities

G5 – O4) Leverage current social networking technologies to expand the educational and notification opportunities of the installation wildland fire management program.

G5 – O5) Participate in organized public outreach events as able, such as Army Earth Day, Career Day, installation Safety Day(s), or other outreach opportunities.

1.6 FUNDING REQUIREMENTS

1.6.1 *Equipment and Training*

The annual cost for basic equipment (drip torches, PPE, hand tools, etc.) and training is program-specific and can depend on personnel staffing levels for any given year. Expected annual costs per program area for general equipment and PPE purchase, replacement, and/or repair is less than $10,000 per year. Heavy equipment, vehicles, skid units, and all-terrain vehicle (ATV) purchases occur on an irregular basis. Table 1-1 below is the expected significant equipment purchases per program and cost estimates for the next five years:

[redacted]

Combined annual training for all program areas is also expected to be approximately $10,000 per year. On-site training may include basic wildland fire behavior, basic wildland fire suppression, incident command, wildland fire heavy equipment operation, engine operations, pump operations, chainsaw

use and safety, ignition operations, ATV operation and safety, annual refreshers, and/or higher level training related to wildland fire behavior, monitoring, and suppression strategies. Refer to Section 1.12 for a description of specific training requirements.

1.6.2 *Funding Sources*

Per the Army Wildland Fire Policy Guidance (August 2002), "Funding for IWFMP implementation, wildland fire prevention, fuels management for hazard reduction, wildland fire suppression, prescribed burning, and other wildland fire management is an installation operations and maintenance (O&M) responsibility. Resource planning and programming should be addressed in the next Program Objective Memorandum cycle." Prescribed burning costs at Fort A.P. Hill are shared to allow multi-directorate participation and multi-level prescribed burn goal achievement. The three contributing sources are DPTMS, DPW, Forestry Authorized Reimbursable Account (ARA), Forestry Reserve Account (FRA), and Fire and Emergency Services.

Increasing funding beyond the personnel and support costs would enhance the overall fire management program. Availability of a helicopter for aerial prescribed burn ignitions would reduce risk to firefighters, increase efficiency in large-scale range complex burns, and decrease time required for burn-out and active smoke production and is, therefore, an investment worth consideration.

[redacted]

1.7 REGIONAL SETTING

1.7.1 *Physiographic Description*

Fort A.P. Hill is located in the Coastal Plain physiographic province approximately 40 miles west of the Chesapeake Bay between the Rappahannock and Mattaponi Rivers. Fort A.P. Hill is at the northern boundary of the Virginia Coastal Plain within the inner coastal plain portion of the province. Since the installation lies just east of the fall line, it shares characteristic topographic features of both the Piedmont and Coastal Plain regions. Terrain at the installation includes level plains with rolling countryside interrupted by numerous shallow valleys that contain areas of sharp relief.
For general classification purposes, land is roughly categorized into four classes:

- Bottomland - Generally wetlands, streams, swamps, and the floodplains of streams.
- Cove - Cove forests are located at middle to low elevations in protected landscape positions. They often occupy concave landforms and protect stream headwaters. Site quality is very high and well adapted to production of yellow-poplar (*Lirodendron tulipifera*) and white oak (*Quercus alba*). Cove lands will often overlap with lands classed as slope. Coves are more typical of the piedmont region, but do occur in isolated portions on the installation.
- Slope - These areas are immediately adjacent to coves and bottomlands. They exhibit great variations in site quality and degree of slope, and consequently vary greatly in vegetation type.
- Upland - These lands extend from the higher elevations to the break of the adjacent slopes. The lands are usually dry and best suited to xeric-adapted tree species.

1.7.2 *Forest Cover*

Forests cover approximately 65,000 acres (87 percent) of the installation land area and encompass three cover types; southern yellow pines, mixed hardwoods, and a mixed pine-hardwood. Generally, a mix of southern pine and hardwoods occurs on the uplands, whereas nearly pure stands of hardwoods occur in the creek bottoms. Pine-dominated sites occupy abandoned farmland and plantations throughout the installation. The presence of these three forest cover types and their varying stand structures contribute to a relatively high level of biological diversity on the installation.

Pine forests cover 29 percent of the installation land area (33 percent of forested acres) and include natural forests as well as plantations of various ages. Dominant pine species include loblolly pine (*Pinus taeda*) and Virginia pine (*P. virginiana*), with a small component of shortleaf pine (*P. echinata*). Deciduous broad-leaf forests cover approximately 35 percent of the land area (40 percent of forested acres). The primary species include yellow-poplar, red oaks (*Quercus falcata, Q. rubra, Q. coccinea, and Q. velutina*), and white oaks (*Q. alba and Q. stellata*) interspersed with hickory (*Carya* spp), sweetgum (*Liquidambar styraciflua*), black gum (*Nyssa sylvatica*), red maple (*Acer rubrum*), and beech (*Fagus americana*). Approximately 24 percent of Fort A.P. Hill is covered by a mix of evergreen, needle-leaf trees and deciduous, broad-leaf trees (27 percent of forested acres).

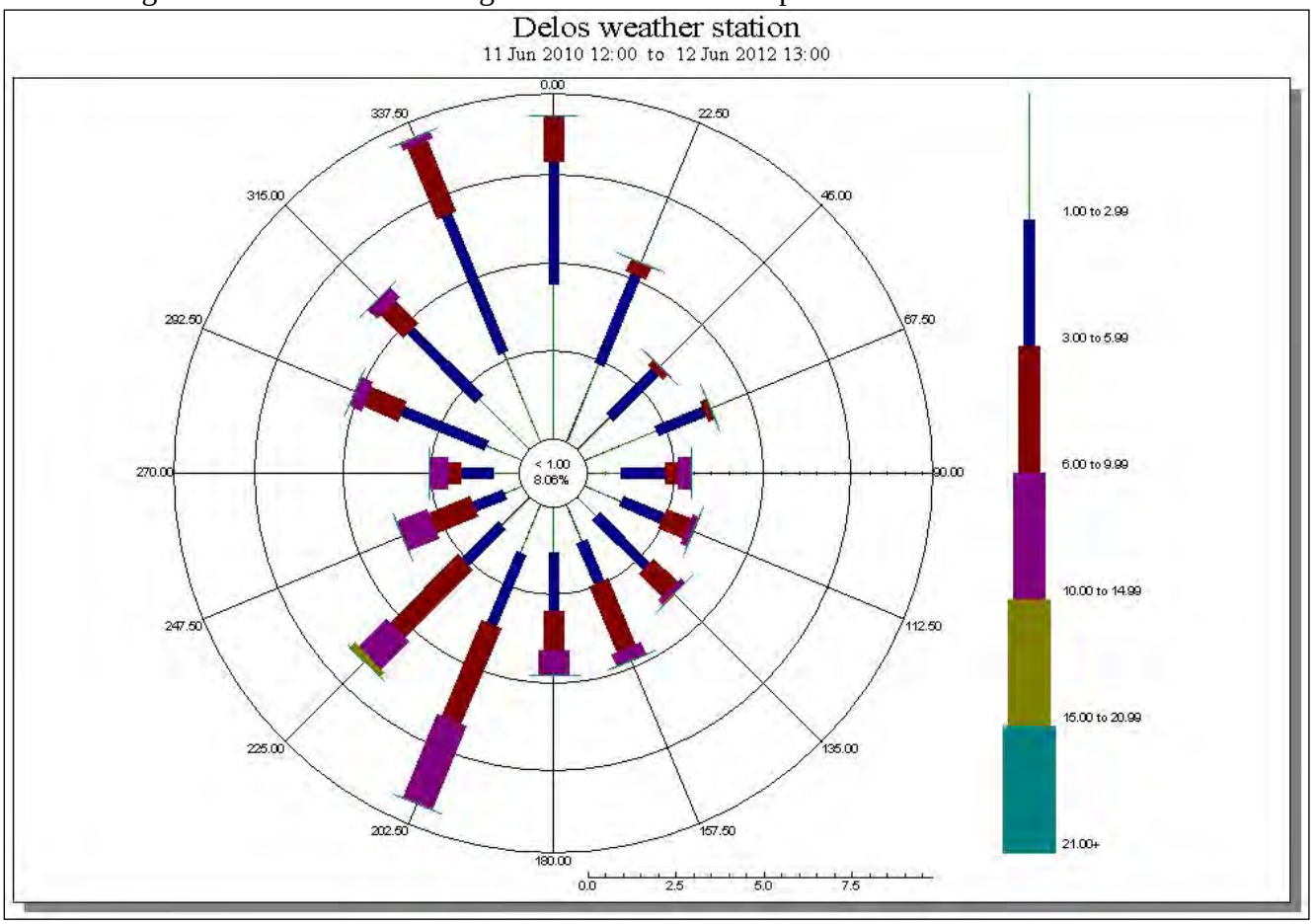
1.7.3 *Climate*

Fort A.P. Hill lies in the transition zone between the northern and southern climates of the United States. The climate is classified as modified continental. Mountains to the west act as a partial barrier to the continental cold air in winter. The open waters of the Chesapeake Bay and the Atlantic Ocean moderate the ambient climate and contribute to the warm and humid summers and mild winters. Summers are warm and humid, with occasional hot and dry periods. Winters are moderately cold with precipitation mainly occurring as rain, although several short periods of snow occur each year.

The coldest weather normally occurs in late December and January, when low temperatures are in the mid-to upper-20's (°Fahrenheit) and high temperatures average in the upper 40's. July is the hottest month, with an average maximum temperature in the upper 80's to lower 90's. The average annual precipitation of 40.1 inches is fairly evenly distributed throughout the year.

Annual prevailing winds are from the south-southwest except during the winter months when the wind blows from a northwesterly direction (Figure 1-2). Average surface wind speed is approximately 10 to 22 miles per hour. Severe weather conditions can result from tropical storms and hurricanes that, on occasion, produce strong winds and heavy rains with accompanying damage. Atmospheric thermal inversions can occur any time of the year, but are most frequent and intense during the late summer and early autumn.

Figure 1-2. Annual Prevailing Wind Direction and Speed for June 2010 to June 2012



1.7.4 *Air Quality*

Fort A.P. Hill is located in the Northeastern Virginia Air Quality Control Region (AQCR), one of seven regions in the state used to monitor ambient air quality trends. There are no air quality monitoring stations in Caroline County; however, according to Virginia Department of Environmental Quality (VDEQ), Caroline County is classified as an attainment area based on the nearest air quality monitoring stations.

1.7.5 *Wildland Fire History*

Virginia has a rich cultural history which includes accounts of wildland fire being used routinely by Native Americans. Historical evidence conveys that native populations utilized fire as a land management tool in relation to agriculture, hunting, and opening travel corridors (Brown 2000). It is theorized that the routine use of fire in the region shaped “a changing mosaic of vegetation types that included fire-adapted species on some sites and fire-intolerant communities on others” and possibly contributed to the development of an oak and pine dominated forest type (Brown 2000).

Wildland fire has been a part of the installation history since the acquisition and initiation of military training in 1941. Initial wildland fire policy called for immediate suppression. Prescribed burning was

initiated in the 1960's in the dedicated impact areas and for forestry purposes following clearcut harvest operations in the training areas. During this time, the policy of aggressive fire suppression continued. In the 1990's, prescribed burning continued in the impact area and forest harvest sites and the fire suppression strategy switched from immediate suppression to allowing the fire to burn out. As a result of fuel build-up surrounding the range complex, two fires escaped the impact area where they burned intensely in the surrounding controlled access areas, ultimately burning on to state and private lands.

To date, more extensive prescribed burns are implemented across the installation to address fuel loading and reduce the severity of the frequent wildfires occurring in the range complex. In order to minimize firebreak construction in the training areas, burn blocks have grown in acreage and cover many acres of previously unburned areas. These prescribed burns accomplish multiple ecosystem and training related land management goals.

Though some prescribed burning is accomplished during the fall months following leaf-fall (October 1st – November 15th), most prescribed burning is accomplished in the late winter months from February 1st – April 15th. This coincides with the recognized wildfire seasons in Virginia which occur from February 15th through April 30th and from October 15th to November 30th. Historical wildfire data and expected weather conditions identify these times as those most likely to be characterized by conditions ideal for wildfire ignition and spread. During the Virginia spring fire season (February 15th through April 30th), the state implements a 4:00 pm burn ban stipulating that no open burning will be permitted until after 4:00 pm when increasing relative humidity and decreasing temperature reduce the risk of fire escapes. Due to the approved annual prescribed burn plan, response resources, and presence of certified prescribed burn managers, the installation continues to implement its prescribed burn program during the spring fire season.

Fire frequency can vary greatly by vegetative cover type, site-specific meteorology; stand age, aspect, and elevation. Most variation of frequency for Fort A.P. Hill and similar military installations derives from human ignition sources. Military training is the primary source of wildfire ignition on the installation and contributes to a relatively high fire frequency. The use of devices such as pop-up illumination flares, smoke grenades, tracer rounds, light and heavy artillery rounds, and other types of military ordnance, during military training activities, will continue to be a potential source of year-round ignition for wildfires at the installation.

For the natural components of fire ignition, seven basic fire regime classifications for North American ecosystems have been established (Morgan et al. 2001). Two of these fire regime classifications can be applied to portions of the Fort A.P. Hill ecosystem. They include:

1. Frequent, low-intensity surface fires (1-25 year fire return interval). Includes: ponderosa pine, Douglas fir and southeastern pine stands.
2. Infrequent, low-intensity surface fires (>25 year fire return interval). Includes: sub-alpine forest, most eastern deciduous forests, and sand pine scrub.

Appendix B provides an analysis of recent (past 10 years) wildland fire history.

1.7.6 Fire Behavior

Fort A.P. Hill exhibits physiographic and vegetative characteristics of both the Piedmont Plateau and the Coastal Plains physiographic regions. Topography, weather, fuels, and the degree of

mechanization of fire suppression forces are four major factors that affect strategy and tactics in these regions.

The flat woods of the Coastal Plains and the gently rolling topography characterizing the Piedmont are a minor concern in fire behavior as compared to weather and fuels. Except in local situations, such as river bluffs, slope will not have as significant an effect on fire behavior as weather and fuels. Mechanized suppression efforts in these areas are most effective. Due to the regional climate, fires in the Piedmont and Costal Plains burn most acreage during the day and die down nightly. Fire intensity and rate-of-spread will predominantly be determined by the wind speed and the type and continuity of fuels and may be extreme with the right combination of contributing factors.

1.7.7 *Fuel Models and Wildland Fuel Factors*

There are 13 Fire Behavior Prediction System (FBPS) fuel models that are used to describe fuel complexes with which to make fire behavior predictions (Anderson 1982). Fort A.P. Hill can be classified with nine of these fuel models, indicated below by an asterisk:

1 - 3 Grass model – grass carries fire
- 1 – Short grass* (1 foot)
- 2 – Timber grass and understory*
- 3 – Tall grass* (2.5 feet)

4 -7 – Shrub models – shrub layer carries fire
- 4 – Chaparral (6 feet)
- 5 – Brush* (2 feet)
- 6 – Dormant brush, hardwood slash*
- 7 – Southern rough

8-10 – Timber models – litter carries fire)
- 8 – Closed timber litter*
- 9 – Hardwood litter*
- 10 – Timber (litter and understory)*

11-13 – Logging slash models – logging debris carries fire
- 11 – Light logging slash*
- 12 – Medium logging slash*
- 13 – Heavy logging slash

These fuel models are helpful when predicting fire behavior, though one area can be characterized by multiple fuel models. Fuel models one and nine are most suited to fuel and forest cover structures found on Fort A.P. Hill; however, choosing the appropriate model requires experience and personal judgment. Predicted behavior and spread can be compared to actual behavior and spread observations to adjust model choices for the area.

In 2005, Fort A.P. Hill's Range and Training Land Assessment (RTLA) program completed an evaluation of forest fuel loads to establish baseline conditions (by forest type and structure class) and assessed the effectiveness of the prescribed burn program in the Range Complex. The results of this inventory showed that coarse woody debris was found to average 10.3 tons/acre (+/- 1.8 tons/acre)

post-wide with slightly higher values observed in controlled access (CA) forests than training area (TA) forests. The majority of the coarse woody debris (CWD) values observed do not by themselves represent an undue fire hazard based on in-house derived metrics. Total fine woody debris (all fuels time lag classes) consistently averaged 3.2 tons/acre for both TA and CA forests, and subsequently post-wide. The 10-hour fuels time lag class was found to be significantly higher in younger forests than mature forests. Leaf litter cover was found to be, on average, 21 percent reduced in CA forests in comparison to TA forests, attributed to the fire regime typical of the Range Complex as a whole. Leaf litter depth was also found to be reduced in CA forests in comparison to TA forests. Standing dead trees (snags) averaged 16.5 stems/acre post-wide, with slightly higher densities observed for CA forests. Snag densities on the whole do not represent an undue fire hazard. Figure 1-3 and Table 1-2 illustrate distribution information of CWD and downed woody material (DWM) statistics by forest structure that resulted from this assessment. Though observations of CWD ranged from 0 – 70 tons/acre post-wide, 2/3rds of the stands sampled had less than the average weight of CWD observed.

Figure 1-3. Histogram Illustrating the Distribution of CWD on Fort A.P. Hill (n = 102 stands)

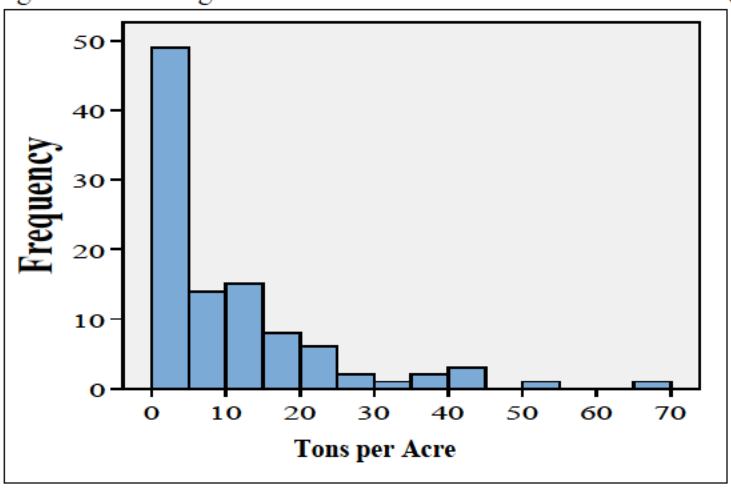


Table 1-2. DWM Statistics by Forest Structure and Forest Covertype on Fort A.P. Hill

Covertype	Structure	Mean [a] (tons/acre)	S_E [b]	Min. [c]	Max. [d]	St. dev. [e]	CV [f]	n [g]
Pine	Pole timber	5.5	0.8	1.7	13.1	3.2	0.58	16
	Sawtimber	24.7	6.4	1.9	54.6	18.1	0.73	8
	-	11.9	2.8	1.7	54.6	13.9	1.17	24
Hardwood	Pole timber	7.7	1.6	2.5	14.2	4.0	0.52	6
	Sawtimber	12.9	2.3	1.0	73.2	13.8	1.07	36
	-	12.2	2.0	1.0	73.2	13.0	1.07	42
Pine-Hardwood	Pole timber	12.8	3.6	1.5	44.3	12.0	0.94	11
	Sawtimber	17.5	2.5	1.7	47.4	12.0	0.69	23
	-	16.0	2.1	1.5	47.4	12.0	0.75	34
-	Pole timber	8.3	1.4	1.5	44.3	8.0	0.96	33
	Sawtimber	15.9	1.7	1.0	73.2	14.1	0.89	67
-	-	13.4	1.3	1.0	73.2	12.9	0.96	100

a arithmetic average
b standard error
c minimum observed value
d maximum observed value
e standard deviation
f coefficient of variation
g number of forest stands sampled; some DWM components were missing on some plots for various reasons

1.8 ENVIRONMENTAL CONSIDERATIONS

DoDI 4715.3 and the resulting AR 200-1 direct land managers on military lands to apply an ecosystem management approach in their plans and decisions. The Fort A.P. Hill INRMP describes ecosystem management as a holistic approach to the protection of biodiversity. Its goal is to preserve, enhance and sustain ecosystem integrity in order to maintain the complex, natural community of living organisms. Ecosystem management involves awareness of current resources, the potential of the ecosystem to support an optimum level of biodiversity, the long-term sustainability of that diversity, and the management measures necessary to achieve and sustain a viable and healthy ecosystem and military training landscape. To accomplish successful ecosystem management, the Garrison Commander and natural resource coordinators work to manage an ecosystem over time. Additionally, the eMs implemented on the installation includes the evaluation the actions and impacts of wildland fire management on the installation to determine if there is a significant impact requiring mitigation. As such, the impact and interaction of fire in the ecosystem will be considered and monitored.

1.8.1 *National Environmental Policy Act of 1969 (NEPA)*

Under NEPA, federal agencies are required to take into consideration environmental consequences of proposed actions. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decision-makers to improve the quality of final decisions. Thus, the NEPA process includes the systematic, interdisciplinary evaluation of potential environmental consequences resulting from a proposed action.

Site-specific Environmental Assessments (EA) are completed for activities resulting from the implementation of this plan. The EA for the INRMP addresses the intent and application of the wildland fire program and the Five-Year Forestry Management Activities EA identifies and describes site-specific prescribed burn implementation and remediation plans. The EAs that describe and assesses the impacts and use of wildland fire is available for review in the ENRD and Forestry Branch offices.

1.8.2 *Fire Ecology and Management Applications*

Of all of the natural forces that have shaped forest ecosystems, fire has had the most impact. Change is biologically necessary to maintain many healthy ecosystems and resource managers have learned to use fire to cause changes in plant and animal communities to meet their objectives. Fire has helped to control competitive species, prevented overstocking of forest stands and has been such a significant shaping force throughout history, that many modern forest ecosystems require fire to maintain a healthy condition. As a natural phenomenon, fire is linked to the dynamics of many plant communities and animal populations and can be a safe way to apply a natural process to ensure ecosystem health, and reduce wildfire risk.

Fire is recognized by the U.S. government, as a critical process affecting forest health. Forest health is defined by the U.S. Forest Service (2002) as, “a condition wherein a forest has the capacity across the landscape for renewal, for recovery from a wide range of disturbances, and for retention of its ecological resiliency while meeting current and future needs of people for desired levels of values, uses, products, and services.” The maintenance of regular burning regimes helps prevent surface fuel buildup and an over-accumulation of small trees and brush that makes forests more susceptible to severe wildland fires, insect infestation, and disease outbreaks. Healthy forests are vitally important as animal habitat, as watersheds, and for resource production. In addition to maintaining open forests, fire serves for fuel reduction, site preparation for seeding or planting, enhancement of wildlife habitat,

control of undesired vegetation, forest pathogen control, improved access, improved appearance, and biotic community restoration and maintenance.

Forest fire regimes have been altered by exclusion efforts and other land use practices resulting in fires that tend to be larger and more severe than those of past centuries. Small surface fires generally have sufficient intensity to reduce fuel build-ups and control vegetation while imposing little to no damage to established trees. Varying fire timing, frequency, and intensity produces differing resource responses that create the correct changes for habitat manipulation.

Fires also affect the physical, chemical, and biological characteristics of forest soils. Light burns frequently increase soil pH, stimulate nitrification, and improve soils chemically. Black ash settles on the soil surface after a green fire and because of the dark color, solar energy is conducted at higher degrees. Higher soil temperature stimulates seed germination for rapid growth. There is increased availability of phosphorus, potassium, calcium, and magnesium in the ash deposit. Mineral salts of calcium, potassium, sodium, and magnesium are often increased; these minerals are water soluble and usually are taken up by organisms and plants after burning occurs. The new growth after a fire is more productive and palatable for herbivores than prior to the burn and is higher in water content. Animals grazing burned areas gain more weight and have less problems with ticks, mites, and flies. Fire is an essential element in our ecosystem as natural management technique to control species dominance, promote healthy plant production, and successful germination.

On Fort A.P. Hill, the disturbance created by fire is intentionally introduced in young regenerating pine stands to reduce understory densities; in hardwood stands with an oak regeneration component present in order to reduce competitive species; in recently harvested stands to reduce debris and expedite nutrient cycling to encourage regeneration; and in areas where a grassy area or open understory is desired. Each type of burn can enhance habitat and forage available for wildlife, encourage the establishment of native plant species and can provide the benefit of enhanced training settings and access. Varying the timing, frequency, and intensity of fires can assist in changing plant and animal communities as needed to meet management objectives. Fire-maintained ecological communities are uncommon in the mid-Atlantic region due to fire exclusion practices and increased development. The recurring use and occurrence of wildland fire on the installation create opportunities for unique, fire-dependent habitat and related species management. The ecological impacts and benefits of fire in the Fort A.P. Hill ecosystem will be evaluated and monitored for future prescribed burn plan considerations as indicated in objective G2 – O2 of this plan.

Although there are many ecological benefits associated with wildland fire, there can be adverse impacts to the same resources. The high-intensity and high fire resident times can have detrimental effects to soil properties and can cause increased stem mortality. Knowledge of the location of rare, threatened or endangered plant species and young, regenerating forest stands are needed by prescribed burning and fire response personnel for appropriate prescriptions and adequate protection. Fires may also have detrimental effects to cultural resources, so knowledge of the locations of these sites is needed by prescribed burning and fire response personnel for appropriate protection. Awareness of such environmental consideration and limitations will help to ensure minimum resource impacts related to wildland fire. A wildland fire considerations map depicting environmentally sensitive areas can be found in Appendix C.

1.8.3 *Sensitive Natural and Cultural Resources*

Fort A.P Hill is rich in diversity of native flora and fauna, including several state and federal listed threatened or endangered plant species including swamp pink (*Helonias bullata*) and small-whorled pogonia (*Isotria medeoloides*). Additionally, bald eagle (*Haliaeetus leucocephalus*) nests occur at various locations across the installation. Special treatment and consideration is applied to these nest sites when applying prescribed burns. The installation also has a rich cultural history with documented historic and prehistoric sites. In order to account for these sensitive resources, an internal Natural Resources Site Assessment (NRSA) is completed on each proposed prescribed burn block. This consists of a desktop GIS or on-site field survey by various installation resource managers to pre-identify any sensitive resources that may benefit from or be damaged by wildland fire. The NRSA process includes a cultural resources survey on each proposed firebreak.

Several best management practices are implemented during wildland fire activities to reduce environmental impact and avoid sensitive resources. Any identified sensitive plant colonies, bald eagle nest sites or cultural resources are protected from prescribed burning by means of seasonality of burns, back-burning operations, or fire exclusion as directed by the INRMP and installation Endangered Species Management Plans (ESMPs). Mechanized heavy equipment (dozers/graders) is not used within 100 feet of any perennial or intermittent stream or wetlands; instead a handline or tractor and rake system is used to minimize soil disturbance and resulting erosion when installing firebreaks. Any exclusion to the 100-foot policy will be reviewed and cleared by water quality and other natural resource managers through the NRSA process prior to implementation. Firebreaks installed on slopes will have the appropriate turn-outs, water control structures, and/or seeding as specified in the *Virginia Forestry Best Management Practices for Water Quality* (2011). Additionally, the wildland fire considerations map (Appendix C) is provided to Range Control and Fire Department personnel for awareness during wildfire response. It is understood that the emergency situations created by some wildland fire events may prevent holistic sensitive resource awareness and protection. In the event that a sensitive resource is disturbed or damaged, remediation will be quickly implemented and appropriate cooperative agencies notified.

1.9 MISSION CONSIDERATIONS

Fort A.P. Hill is a collective training facility that hosts an extensive variety of training scenarios and weapon systems to meeting pre-deployment training requirement of visiting troops. Over 90,000 soldiers visit and train at Fort A.P. Hill annually. Though a fire-managed landscape is highly beneficial to maintaining the desired “missionscape” and reducing the risk of uncontrollable wildfire, a conveying awareness of the impacts of wildland fire on training objectives and personnel is required.

1.9.1 *Scheduling*

The RFMSS is a fundamental tool for prescribed burn planning and personnel accountability. Online RFMSS reservations may be made 30 days prior to required access and may be used to reserve high-priority burn areas; however, due to the unpredictability in weather and favorable burn conditions, 30-day out planning is difficult to achieve. The Range Officer may approve week-prior and day-of requests as suitable with expected training loads and documented scheduling procedures. RFMSS can also be leveraged to determine if personnel are expected to be present in areas where a wildfire is occurring or likely to spread. Additionally, the Game Check Station, run by Morale, Welfare and Recreation (MWR) will have accountability of hunter or other recreational users that may be occupying an area.

1.9.2 *Unexploded Ordnance*

Unexploded ordnance (UXO) can be found in many areas within the Range Complex. The Fort A.P. Hill military installation map (MIM) identifies areas that are known to be contaminated with UXO and areas that are likely or potentially contaminated with UXO. Access to the controlled access areas may be granted by Range Control in coordination with the Fire Desk. In order to ensure the safety or prescribed burn and wildfire suppression personnel, the location of these areas in reference to the fire activities must be made clear. Previously accessible roads now classified as “no-go” or “restricted” due to potential UXO contamination must also be clearly identified on site maps and in safety briefings. A map of these roads can be found in Appendix D. No heavy equipment firebreak or handline construction will occur in the dedicated impact areas for any reason. Heavy equipment or hand tools will not be used in the impact area buffers unless expressly cleared to do so by the Range Control Officer. UXO awareness training will be provided to all wildland fire personnel as UXO may be found in any area on the installation.

1.9.3 *Tenants*

Multiple tenant units occupy the grounds and facilities on Fort A.P. Hill. Tenant personnel are briefed on the annual prescribed burn plan at the quarterly Environmental Quality Control Committee (EQCC) meetings and they are notified of the daily Fire Danger Rating (FDR) classification. If a prescribed fire is planned within the vicinity of a tenant facility, they will be notified through the daily notification procedure prior to prescribed burn implementation. Tenants are encouraged to consult with the Fire Department and Natural Resource Managers to determine wildland fuel and fire risks associated with their facility.

1.10 MONITORING REQUIREMENTS

Wildland fire, whether prescribed or wild, can quickly change the composition and structure of ecological communities and the supported training landscape. A program to monitor fire effects is necessary to assess the impacts of fire on the vegetative community in order to appropriately adjust fire application techniques, protect sensitive resources, and/or determine the need for community restoration. Monitoring is also required for the adaptive management process, a required part of ecosystem management as outlined in DoDI 4715.3 and the eMs standard outlined by the International Organization of Standards (ISO) 14001. Monitoring efforts currently in place at Fort A.P. Hill are multi-layered to address both the holistic management of the ecosystem and landscape, and to monitor specific plant-species response.

The installation acreage is predominantly (87 percent) forested. The forested areas have been delineated into Forest Management Units (FMU) that has each been assigned a Desired Future Condition (DFC) consisting of a forest structure and species community type. The DFCs were selected based on mission requirements for landscape and terrain conditions as well as existing forest cover and structure types. Prescribed burn goals and objectives are established based on the DFC. The Forest Resource Inventory (FRI) is a large scale forest inventory established to refresh species, structure, regeneration, and forest health information on a ten-year cycle. This inventory was initiated in 2011 and the resulting data is used to determine the current structure and the actions required to meet or maintain the DFC for each FMU. The intent is long-term, large-scale, incremental monitoring of structure and composition. Within the FRI, a sub-set of data is collected and analyzed for FMU’s that have a specified oak community DFC. Fire is a well-documented tool for use in retaining oak species

within a forest community. The resulting information documents appropriate timing for prescribed burns and resulting successful establishment of oak as primary species within the FMU.

Site-specific information is collected in several ways. A post-burn evaluation is conducted immediately at the end of each prescribed burning activity. This monitoring evaluates the approximate final burn acreage, thoroughness and intensity of the, residual scorch, and estimated mortality resulting from the burn. Additionally, the *Landscape Assessment Sampling and Analysis Methods* established by Carl H. Key and Nathan C. Benson of the USDA Forest Service in 2006 (RMRS GTR-164-CD-2006). Commonly known as the Composite Burn Index (CBI), this methodology establishes an index value for relative burn severity. The scale of severity from 0.0-3.0, gauges the magnitude of changes that have occurred to the surveyed plot due to fire intensity. The values are not absolute, but instead are relative values comparing post-fire conditions to pre-fire estimates. Further, severity factors are calculated independent of fuel types, season of burn, topography, and geographical region. The versatility of this rating system allows the manager to not only compare fires to each other, but also isolates where the greatest impacts of the fire are occurring across the landscape. Additional information on the application and interpretation can be found in the referenced methodology.

The Fort A.P. Hill Forestry Branch maintains a photo-point inventory implemented on a recurring cycle at permanent points in areas that receive recurring prescribed burn management. The photos can be evaluated through time for understory and visibility impacts, fuel consumption studies, and potential erosion monitoring within the Streamside Management Zones (SMZs), 50 horizontal feet from the stream bank and the Riparian Protection Area (RPA), 100 horizontal feet from the stream bank. This type of monitoring provides more detailed information on the impacts of fire to the local ecosystem and evaluates the success of the prescribed burns compared to the stated goals.

Finally, an invasive species monitoring protocol was established in 2011 to monitor the response and potential spread of various non-native, invasive plant species identified on the installation in response to fire management activities. Baseline data on permanent transects was collected in 2011 with recurring surveys required one growing season after the application of a management activity. The resulting information will be used to address the timing and intensity of fire applied in areas with known non-native, invasive species plant populations with the intent of preventing spread, controlling, or reducing populations.

Each attribute of this monitoring program will contribute to providing long-term information need to apply adaptive management to fire-dependent communities and the overall ecosystem on the installation. Documented methodologies for each monitoring and inventory protocol are available upon request from the Fort A.P. Hill Forestry Branch.

1.11 PUBLIC RELATIONS AND NOTIFICATIONS

Wildland fire can have impacts that extend beyond the “fenceline”, whether due to smoke movement and dispersion or fire escaping the installation boundary. Fort A.P. Hill has adopted a proactive approach to engaging and informing the public of intended and unintended burn activities. Proper communication prior to burning activities helps alleviate undue concern and provides for favorable public relations.

The PAO coordinates with the Forestry Branch and Fire Department to develop an informational public release prior to the fall and/or spring burn season. This conveys information in regards to the intention, need and benefit of wildland fire management on the installation. This information should

convey the ecological and fuel reduction benefits of prescribed fire application as well as the in-place management and planning procedures. Fort A.P. Hill leverages the Caroline County Alert System that alerts subscribers of wildland fire activities through electronic mail, text messaging, and/or phone calls. This system is free to subscribers, the alert method is determined by the user's preference, and the installation-specific messaging is administered through the PAO. PAO also disseminates alerts and messaging through social media venues including the Fort A.P. Hill Facebook page and Twitter account, allowing the installation to reach a wide-spectrum of regional residents and the engaged public.

Due to the high visibility of plume and smoke resulting from installation fires, surrounding county dispatch and state forestry offices can receive a high volume of inquiries from concerned or curious observers. In order to provide advanced information for these offices, Fort A.P. Hill Forestry Branch contacts the county dispatch and state forestry offices in Caroline, King George, and Spotsylvania counties prior to each prescribed burn. The VDEQ is also informed of prescribed burn activities for proper pollutant monitoring and potential smoke impact preparation. Fort A.P. Hill dispatch may notify the VDOT if travel conditions on surrounding state roads become hazardous due to smoke.

Internal notification of wildland fire activities is also provided to appropriate directorates, tenants, and installation personnel. Notification is provided through the AtHoc network notification system, intranet, electronic mail, and phone calls. The current notification roster can be seen in Appendix E.

1.12 PERSONNEL TRAINING, CERTIFICATION STANDARDS, AND RECORDS

Due to the complexity of fire behavior and the unpredictability of influence from weather, firefighters need both classroom and experiential training to perform their duties knowledgably and safely. The basic components of firefighter training will be acquired and maintained by fire response personnel at Fort A.P. Hill. The purpose of this section is to present all required and recommended training to levels exceeding minimum requirements as established by the, Army, NWCG, National Fire Protection Association (NFPA) or Fort A.P. Hill Command.

1.12.1 *Fire Prevention Education*

A key to wildfire prevention is education for increased public and Fort A.P. Hill user awareness. Successful education programs can help to reduce the incident of accidentally-ignited wildfires as well as encourage proper wildfire response procedures. ITAM's Sustainable Range Awareness program can play an active role on distributing appropriate educational materials to installation users.

Proper preparation and training will also create a knowledgeable and capable prescribed burning and wildfire response force and provide the basis for coordination in advance emergency situations regarding fire. This preparation revolves around training that produces understanding and knowledge of wildland fire behavior in response to weather, fuel and topographic conditions, understanding and knowledge of firefighting equipment and readiness planning. Each of these components is equally important in the effort of preparation and prevention.

The Fire Prevention Program conducted through DES at Fort A.P. Hill includes training and public awareness for all military personnel, civilian employees, and interested dependents and visitors. Within the scope of this training, the following information is presented:

- The only authorized human caused fires permitted within the boundaries of Fort A.P. Hill are those that are authorized by the Fire Chief.
- The majority of all wildfire activity on Fort A.P. Hill is caused by the use of incendiary devices in training of military personnel.
- All personnel operating, living, or working at Fort A.P. Hill will be informed of the criteria for fire prevention relative to the daily FDR.
- Primary concern for the control of wildfire activity is the protection of life and property.

The use of public information dissemination tools (e.g., posters, flyers, internal newsletters, and placards) is included in the effort to ensure awareness and sensitivity to the potential severity of wildfire activity. ITAM's Sustainable Range Awareness program can provide a venue for creating and disseminating educational materials. Additional measures taken to provide avenues for such education include:

- Establishing centralized dissemination points for fire prevention information at DPTMS, Provost Marshal, and Fire Department offices on the installation.
- Provide printed prevention material to all offices, tenants, and visiting training units to Fort A.P. Hill.
- Increase awareness during periods of extreme fire danger by posting conspicuous posters and placards at installation entrances and points-of-contact (e.g., training and range control offices).
- Initiate or optimize media involvement to establish the installation's commitment to fire prevention through the use of news articles, photo opportunities, and press releases.
- Participation by fire response personnel and equipment in local parades, fairs and other "outreach" programs, to promote fire prevention awareness.

1.12.2 *Certification Standards for Wildland Fire Management*

All military, civilian, contractor, and emergency services personnel involved in wildland fire management on Fort A.P. Hill must meet the standards outlined in this plan appropriate for their expected level of involvement in the wildland fire organization. These standards do not apply to military personnel deployed by orders from the Garrison Commander.

DES, DPTMS and DPW personnel and contractors are expected to meet separate, but equally qualifying certification standards. DES personnel in the GS-081 job series and 51M career path will meet the certification standards specified in the NFPA Standard 1051 – Standard for Wildland Fire Fighter Professional Qualifications and NFPA Standard 1002 – Standard for Fire Apparatus Driver/Operator Professional Qualifications as specified in DoDI 6055.6 and the Army Wildland Fire Policy Guidance. All DPTMS, DPW, or other Army personnel or contractors with jobs requiring wildland fire responsibilities will be required to attain training according to NWCG Wildland Fire Qualifications Subsystem Guide (PMS 310/NFES 1414) position standards as per the Army Wildland Fire Policy Guidance (2002).

Per the Army Wildland Fire Policy Guidance, personnel who have learned skills from sources outside wildfire suppression, such as agency specific training programs or training and work in prescribed fire, structural fire, law enforcement, search and rescue, etc., may not be required to complete specific courses in order to qualify in a wildfire position. In this case, however, position task books must be

completed for documentation of experience and certification. The Fort A.P. Hill Prescribed Fire Program Manager may certify that individuals (civilian or contractor) meets the qualifications for a position as an evaluator of position task book skills and experience and may issue NWCG-recognized "Red Cards" documenting that individuals have met positions skills and physical fitness standards. Evaluating skills and certifying qualifications does not constitute a liability for the Prescribed Fire Program Manager unless knowingly certifying an individual as qualified that did not or does not meet the position qualification requirements.

Due to the frequent occurrence of fire in the Range Complex, personnel within Range Control will be trained per NWCG standards as they often serve as the first response personnel and make decisions regarding the initial suppression requirements.

Position descriptions for new hires that will participate in wildland fire activities will reflect the expected level of involvement and required certifications. Position descriptions with wildland fire management duties must state if the position qualifies the position holder as a primary or secondary wildland firefighter, as described in Chapter 46 of the Office of Personnel Management Civil Service Retirement System and Federal Employees Retirement System Handbook for Personnel and Payroll Offices. Personnel not classified as a primary or secondary wildland firefighter will perform duties in wildland fire management activities as qualified.

1.12.3 *Wildland Fire Certification Monitoring Authorities*

HQ Air Force Civil Engineering Support Agency/Civil Engineering Fire Protection is the executive agent for the Firefighters Certification Program (FFCP) and is responsible for issuing, maintaining, and tracking of wildland firefighter certifications. The Assistant Chief of Staff of Installation Management (ACSIM), Facilities and Housing Directorate, is responsible for maintaining and annually updating a list of NWCG certified wildland firefighters for the Army.

Program supervisors are responsible for tracking and ensuring proper training of staff according to expected wildland fire involvement. It is the responsibility of each individual to maintain records of personal training and certificates in the event of an error in the certification monitoring system. A composite roster of wildland fire qualified personnel available on the installation will be updated by the Fort A.P. Hill Safety Office and appended to this plan annually (Appendix F).

1.12.4 *DES Firefighter Training Requirements and Records*

It is the responsibility of the Fire Chief to control and organize the training for all DES wildland fire personnel. Additionally, it is recommended that the Fire Chief attend the DoD Worldwide Fire and Emergency Services Training Session, which is held concurrently with the International Association of Fire Chiefs (IAFC) conference.

General firefighter training may include a number of components, including two courses geared towards brush or wildfire activity. Tables 1-3 and 1-4 identify the training criteria, recommended level of accomplishment, personnel to whom the training will be provided, and required periodicity for refresher courses.

Table 1-3. Fire Department Suppression Proficiency Training (Academic and Practical)

Subject	Fire Chief/Officer	Firefighter	Augmentee	Refresher Periodicity
Aircraft Egress	R	R	NR	Q
First Aid/CPR	R	R	R	Q
Pumper Operation	R	R	C	A
Rescue Tools	R	R	C	Q
Training Fires	R	R	C	SA
Mutual Aid	R	R	NR	A
Structural Drills	R	R	NR	M
Pre-Fire Planning	R	C	C	Q
ICS Field Exercise	R	R	R	SA
Water Supply for Fire Protection	R	R	R	Q
Sprinkler Systems	R	R	NR	Q
Fire Inspection Procedures	R	R	NR	SA
Breathing Apparatus	R	R	C	SA
Apparatus Testing	R	R	NR	A
Fire Department Communications	R	R	R	SA
Natural Cover Fires	R	R	R	Q
Prescribed Burn Procedures	R	R	R	Q
Hazardous Chemical Accidents	R	R	NR	Q

Firefighter = Professional firefighters assigned to Fort A.P. Hill.
Augmentees = All personnel, designated by this plan, to provide fire fighting support.
R = Required Q = Quarterly M = Monthly
C = Recommended SA = Semi-Annual
NR = Not Required A = Annual

[redacted]

All training programs shall conform to the FFCP requirements. Such components include:

- Participation in courses from the DoD Fire Protection School
- Utilization of the national and state fire academies
- Inclusion of live fire training
- Training for all personnel to First Responder level
- Implementation and maintenance of the on-the-job training program

Primary and secondary wildland firefighters will also be certified, as a minimum requirement, in Cardio-Pulmonary Resuscitation (CPR) and Standard First Aid by the American Red Cross or comparable certification authority.

1.12.5 *Non-DES Firefighter and Prescribed Burn Training Requirements and Records*

Though a centralize wildland fire training and qualifications tracking system is desired by Fort A.P. Hill, until it is organized and implemented directorates will track training qualifications for their own personnel required to meet the NWCG position training standards. Off-site training opportunities are offered in various regional wildfire training academies; however, due to the high number of personnel that need to attend training, DPW, DPTMS, and DES programs benefit logistically and financially by offering on-site training. VDOF, USFS, and private entities have personnel to provide NWCG training. The Annual Fireline Safety Refresher NWCG materials can be administered by appropriate installation personnel. All Fort A.P. Hill wildland fire personnel not involved in the FFCP shall, at minimum, complete the following classes in order to participate in any wildland fire activities on the installation.

- S-130, Wildland Fire Fighting Class
- S-190, Introduction to Wildland Fire Behavior
- I-100, Introduction to Incident Command System
- I-200, ICS for Single Resources and Initial Action Incidents
- RT-100, Annual Fireline Safety Refresher
- CPR and Standard First Aid

Although these are the minimum requirements to be involved with wildland fire on Fort A.P. Hill for DPW and DPTMS personnel, individual effort is encouraged to continue training efforts as required per NWCG position standards (Table 1-6). This may include additional classroom and field training requirements and tracking experience within position task books, approved by an appropriate agency representative (i.e., Prescribed Burn Program Manager).

The Virginia Prescribed Burn Manager Certification is required for Forestry personnel involved in the prescribed burn program at Fort A.P. Hill. It is the responsibility of the Installation Forester to track the successful completion of this certification for personnel. Personnel participating in prescribed burning, who do not have this training, will work directly with a Certified Prescribed Burn Manager until they have received certification. Prescribed burn manager training is offered annually by VDOF. The following tables identify non-DES firefighter qualifications per position and expected level of involvement on the fireline. Though NWCG qualification standards are not currently mandated for installation personnel, this information can be used to proactively consider future expectations and training requirements.

[redacted]

Table 1-7: NWCG Course Titles.

Course	Title
S-130	Firefighter Training
RT-130	Annual Fireline Safety Refresher
S-131	Firefighter Type 1
S-133	Look up, Look down, Look around
S-190	Introduction to Wildland Fire Behavior
S-290	Intermediate Wildland Fire Behavior
S-390	Introduction to Wildland Fire Behavior Calculations
S-490	Advanced Wildland Fire Behavior Calculations
S-200	Initial Attack Incident Commander
S-300	Extended Attack Incident Commander
S-232	Dozer Boss (Single Resource)
S-234	Ignition Operations
S-230	Crew Boss (Single Resource)
L-180	Human Factors in the Wildland Fire Service
RX-301	Prescribed Fire Implementation
RX-410	Smoke Management Techniques
RX-510	Advanced Fire Effects
M-580	Fire Program Management
I-100	Introduction to ICS
1-200	ICS for Single Resources and Initial Action Incidents
1-300	Intermediate ICS for Expanding Incidents
I-400	Advanced ICS for Complex Incidents
I-700	NIMS, An Introduction
I-800	National Response Framework, An Introduction

1.12.6 *Wildland Fire Management of Non-DoD Property*

Personnel, other than GS-0081 job series and 51M, mobilized to participate in wildland fire management activities on properties not under DoD jurisdiction, either through mutual aid agreement or other means, must be certified for the expected level of involvement under NWCG standards or FFCP. GS-081 job series, Army contractors, and 51M personnel that seek certifications other than those specified under the FFCP as specified in DoD I 6055.6 will comply with the appropriate NWCG criteria.

1.12.7 *Physical Fitness Standards*

All military, civilian, contractor, and emergency services personnel involved in wildland fire management (including equipment operators) must complete and pass a medical exam or have a current NWCG Work Capacity Test certification per position duties prior to starting wildland fire duties. DoD 6055.6-M DoD Fire and Emergency Services Certification Program, and the NWCG Publications Management System (PMS) 310-1/National Fire Equipment System (NFES) 1414 – *Wildland and Prescribed Fire Qualifications System Guide*, NFES 1596 – *Fitness and Work Capacity*, and NFES 2071 – *Fit to Work, Fatigue and the Firefighter* provide guidance for establishing physical fitness standards for wildland fire management activities.

The medical exam for military, civilian, and emergency services personnel will follow OSHA criteria contained in NFPA 1500 – *Standard on Fire Department Occupational Safety and Health Program* and receive a physical examination as specified in NFPA 1582 – *Standard on Medical Requirements for Fire Fighters*.

The medical exam for contractors will follow criteria listed in the Federal Interagency Medical History, Examination, and Clearance Form for Wildland Firefighters (Arduous Duty) (Appendix G). The Federal Interagency Wildland Firefighter Medical Standards establish the levels of minimum medical fitness for arduous duty that the agencies have determined to be necessary for safe and efficient job performance based on 5 CFR Part 339 Medical Qualifications Determinations.

All required exams will be paid for by the Government. Responsibility for payment of exams for contract personnel will be specified within the contract.

The Work Capacity Test was established by NWCG to create a standard to measure work capacity and endurance based on job-related tasks and expectations. The intent was to ensure safety of firefighters within normal work expectations and in response to emergency situations that may be encountered. Three levels of Work Capacity Tests were established for workers with arduous, moderate, or light duties as defined in PMS 310-1 (Table 1-8).

Table 1-8. Work Capacity Test Requirements for Arduous, Moderate and Light Duties

Work Category	Test	Distance (Miles)	Pack (Pounds)	Time (Minutes)
Arduous	Pack	3	45	45
Moderate	Field	2	25	30
Light	Walk	1	None	16

Per NWCG PMS 310-1, personnel participating in wildland fire as type 1 and 2 firefighters (FFT1 and FFT2), crew or single resource bosses (CRWB, etc.), and Incident Commanders of types 3, 4, and 5 (ICT3, ICT4, ICT5) will meet arduous level physical fitness standards. Type 2 Prescribed Burn Boss (RXB3) and dozer or other equipment operators will meet a moderate level physical fitness standard.

The Work Capacity Test may be administered to Fort A.P. Hill personnel by qualified individuals. The test administrator will prepare a Job Hazard Analysis (JHA) to be reviewed by test participants. Participants will complete a personal Health Screening Questionnaire (HSQ) and an informed consent form prior to participating in the Work Capacity Test (Appendix H). Additional test administration guidelines can be found in the NWCG PMS307/NFES 1109 – *Work Capacity Test Administrators Guide*.

1.13 RISK AND HAZARD ASSESSMENT

When severe wildland fire situations occur as a result of extreme fire weather, wildfires can cause extensive loss of life, property, and resources. Wildfire prevention is focused on reducing or eliminating the unintentional ignition of wildfires and on the reduction of risks that would contribute to a severe wildland fire situation. Prevention efforts require an analysis of risks, hazards, and values, and require education, awareness and preparedness.

Risks are defined for this plan as those uses or human activities which have the potential to result in a wildland fire ignition and the chance of suffering harm or loss. Per NWCG, a hazard is "any real or potential condition that can cause injury, illness or death of personnel, or damage to or loss of equipment or property". For this plan, hazards are associated with the fuels and topography of an area. The objective in examining hazards is to determine the degree of difficulty required by suppression efforts to control a fire ignition.

[redacted]

[redacted]

The fuel loading assessment conducted by the RTLA program in 2005 provided data and information that was used to evaluate the existing fire hazard in 103 forest stands across the installation. Fuel hazard loading and structural consideration were factored into developing a weighting matrix to evaluate the hazard in each inventoried stand.

Photographs from the field inventory, field data, and color-coded thresholds were incorporated into a hardcopy visual guide for distribution to departments and staff responsible for wildland fire or Range Complex management on Fort A.P. Hill. The visual guide illustrates plot conditions (various forest structure and fuel arrangements) with the color-coded fuel thresholds and overall hazard score (Appendix I). Though the visual guide illustrates forest conditions inherent to Fort A.P. Hill, it does not cover every condition on the installation. The users have the flexibility in selecting fuel scores from several settings of the guide to adequately reflect conditions for a given stand.

A visual guide creates a baseline of communication allowing multiple stakeholders with varying levels of experience and areas of education to agree on perceived fire hazards. As the tool is utilized and fire hazard ratings are assigned to the training landscape, management priorities can also be identified. Areas identified as having high fire hazard ratings can be incorporated into annual prescribed burn plans or burning prescriptions can be tailored to sites based on reported fuel types and loading levels. The fuels guide can be used for recurring evaluation of the fuel loading in areas within Fire Management Zone 1.

Fuel loading assessment is one aspect of hazard rating. An additional aspect of hazard rating includes [redacted]

Installation GIS mapping and data querying capabilities make it highly valuable in fire risk and hazard assessment. The visual geographic distribution of fire hazards and risks allow land managers to more easily prepare plans for risk reduction efforts. The visual representation of geographic distribution can also prepare fire response resources for wildland fire events in preplanning efforts. Additional technology, including FARSITE, a fire behavior modeling program, may also prove useful in determining the fire risk and hazard areas. New fire prediction and model software will be reviewed for application on Fort A.P. Hill.

1.13.1 *Risk and Hazard Mitigation*

Wildland fire prevention requires action to be taken to reduce the potential impact of identified risks and hazards. Live-fire range utilization, a forested or grassland setting, and training resources and structures are identified as risks. The fuel loading located in the natural setting of the installation is identified as a hazard based on accepted definitions. A Fire Danger Rating (FDR) system is used to raise awareness and assist range and land manager with decision-making to reduce risk associated with munitions use and other land management activities. Prescribed burning is used to reduce fire hazards on the installation. The following sections outline these mitigation actions and the acceptable processes, procedures, and guidelines associated with these actions. Chapter three addresses the processes and protocol associated with prescribed burning.

1.13.2 *Fire Danger Rating System and Classification*

The National Fire Danger Rating System (NFDRS) was developed primarily by the U.S. Forest Service to give national uniformity to recording of fire weather and fire danger rating data and to provide fire managers the means of reliably evaluating the factors influencing fire danger in their area. The first version of the nation system was released in 1972 and was based on engineering and physics principles, rather than local observations, to make it applicable nationwide. Modifications to this system occurred in 1978 and 1988. NFDRS is a system that integrates the effects of existing and expected states of selected fire danger factors into one or more qualitative or numeric indices that reflect an area's protection needs.

In 1958, initial efforts began to create the NFDRS implemented in 1972. Early efforts focused on a four-part system including risk, ignition, spread, and fuel energy. The spread function of this formula was developed first. Currently, the Fire Danger Rating for Fort A.P. Hill is computed using the results of these initial spread index calculation efforts, the 1964 timber spread index, with its key component being the build-up index.

On Fort A.P. Hill, Forestry Branch personnel compute and report the daily spread index and related FDR classification. The FDR classification determination is reflective of the general conditions over the entire installation. Ratings are developed for current (observed) or future (predicted) weather based on the temperature, relative humidity, build-up index, vegetative stage/season, and fine fuel moisture. The fire spread index is an indicator of the expected rate of spread (feet per minute) in the identified fuel type under the given conditions and can indicate the difficulty in containing a fire that occurs under those conditions.

The spread index has been classified into five numeric and descriptive categories of fire risk: I – Low, II – Moderate, III – High, IV – Very High, and V – Extreme. These classifications are used for indicating the daily level of fire danger for the installation. Table 1-9 outlines the fire danger classification as it relates to the spread index. The FDR classification of an area gives the land manager a tool for daily fire risk decisions and is intended to supplement the fire manager's knowledge of the local area and of consequences to decisions.

Table 1-9. Fire Danger Rating System Classifications

Category	Spread Index
I Low	0-4
II Moderate	5-9
III High	10-19
IV Very High	20-39
V Extreme	40+

Fort A.P. Hill has the capability of utilizing Fire Weather Plus 2000, which calculates both 1978 and 1988 version NFDRS burn index from weather station observations. The NFRDS burn index differs from the spread index in that it incorporates a fuel model with the spread index to attain an energy release component. The resulting calculation is a relative burn index that provides, not only the rate-of-spread, but also the intensity of fire occurring in those conditions in the represented fuel type. The numeric burn index value can be divided by ten for a predicted flame length occurring at the head of a fire. The appropriateness and effectiveness of updating from the spread index calculation to the burn index calculation for the FDR reporting process is actively being evaluated. The FDR categories would then be reassigned to a range of burn index values as appropriate for the fuel model and observed fire behavior.

Weather stations used for fire weather reporting are to be maintained to NFDRS standards and calibrated routinely. Additionally, the benefit of updating Fort A.P. Hill weather stations to the Remote Access Weather Station (RAWS) system is actively being evaluated for improved weather condition and FDR accuracy and increased data accessibility and sharing.

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1.15 FIREBREAK SYSTEM

A firebreak is defined as any natural or constructed discontinuity in a fuelbed used to segregate, stop, or control the spread of fire or to provide a control line from which to suppress fire, as per NWCG. The firebreak system at Fort A.P. Hill is intended to maximize control and minimize the detrimental effects on the training from wildland fire activity. The establishment and maintenance of this system is an effective prevention measure as wildfire size and intensity are limited by systematic placement of fuel/fire breaks. The firebreak system provides access to many areas across the installation for both prescribed burning and suppression activities.

Though for planning and implementation purposes Fort A.P. Hill defines firebreaks as those plow lines, hand lines, and trails created and maintained for fire management alone, for discussion purposes, the "firebreak system" referred to in this section of the plan includes all trails, roads, fuel breaks, creeks, etc. that may be used for fire management.

Since 1967, controlling wildfires has been the primary focus regardless of the area in which the fire was located. Prior to that time, wildfire activity in the impact area was allowed to burn itself out. As a result, complete burning of the area occurred on at least an annual basis. Between 1967 and 1991, the firebreak system was developed and completed to approximately 90 percent of its planned size and configuration. During that time, wildfire was actively combated throughout the installation.

[redacted]

[redacted]

The firebreak system at Fort A.P. Hill is primarily maintained through utilization of grading and earthmoving equipment from DPW – Roads and Grounds Branch and DPTMS – Land Rehabilitation

and Maintenance (LRAM) program. Grading allows Fort A.P. Hill to adequately maintain proper drainage, remove surface growth of grasses and volunteer brush, and inhibit the encroachment of natural regeneration from surrounding forest stands. [redacted]

- [redacted]
- [redacted]
- [redacted]

The condition of firebreaks and related erosion or vegetation encroachment issues should be inventoried, monitored and addressed as needs are identified, as per objective G1-O9.

In accordance with the Fort A.P. Hill INRMP RPA policy, mechanized equipment will not be used to create firebreaks within the 100-foot RPA unless during emergency response situations or in areas specifically evaluated by ENRD personnel through the NRSA process. Alternative routes will be considered and established when an existing trail that requires regular maintenance occurs within the 50-foot SMZ, 100-foot RPA, or within proximity to any sensitive resource. Firebreaks within the RPA will be constructed using hand tools or a tractor and rake system as appropriate and practical. Back-burn ignition techniques will be used within the SMZs, wherever practical to reduce fire intensity. This will reduce potential sedimentation impacts on Fort A.P. Hill water and other sensitive resources. A GIS evaluation of current firebreak location in relation to water resources will be useful in this effort.

Firebreak improvements and system expansion will occur as needs are identified. Recommendations provided by the Virginia Forestry Best Management Practices for Water Quality (2011) for firebreak installation, maintenance, and rehabilitation will be applied on Fort A.P. Hill. The IWFMP will immediately apply any updates that occur to the installation INRMP RPA policy. Additionally, any newly proposed firebreaks will be surveyed for threatened and endangered species and cultural resources prior to implementation in accordance with the INRMP and the Integrated Cultural Resources Management Plan. The ENRD Cultural Resource Manager will be contacted if any cultural resources are identified if any cultural resources are unearthed during firebreak installation and maintenance activities.

1.16 Smoke Management

The production and effect of smoke is a major consideration in wildland fire management. While there are extensive benefits to the application of wildland fire, the discharge of air pollutants and potential public health effects resulting from wildland fire smoke are well documented. The focus of smoke management on Fort A.P. Hill is to minimize the adverse effects of smoke on human health and

welfare while maximizing the benefits of prescribed fire. Wildland fire management on the installation will comply with the provisions of the Clean Air Act and the Commonwealth of Virginia Air Pollution Regulations (9VAC130, Emission Standards for Open Burning of the State Air Pollution Control Board).

[redacted]

An understanding of smoke production and behavior factors is required to successfully implement management techniques. Acreage, fuel type and loading, phases of fuel combustion, ventilations rates, wind direction, and inversions all contribute to smoke production and behavior. By managing one or all of these inputs, fire managers can work to mitigate negative impacts of wildland fire smoke. Conditions that favor more complete fuel consumption, such as dry fuels and slow-moving back-[redacted]

1.16.1 *Prescribed Burn Smoke Management Guidelines*

Smoke generation and movement is a significant factor that guides prescribed burn planning and implementation. Smoke Management Guide for Prescribed and Wildland Fire (2001) produced by NWCG and the recommended smoke management parameters established by VDOF provide reference materials and metrics that can be applied in prescribed fire planning and daily implementation decisions.

The NWCG Smoke Management Guide provides techniques for emission reduction and redistribution. These include pre-burn fuel reduction techniques to reduce the amount of fuel available for combustion, rapid or mass burning techniques to shorten the smoldering phase of combustion, fuel moisture considerations, back-burning, and rapid mop-up are all recommendations provided. The focus is on creating conditions for efficient combustion and reducing the amount of fuel available for combustion.

The VDOF has outlined recommended weather parameters intended to optimize smoke dispersion and movement:

- Visibility exceeds 5 miles.
- Afternoon mixing heights are 500 meters or greater.
- Ventilation rates (mixing height in meters multiplied by transport wind speed in meters per second) is 2,000 or greater.

Each Prescribed Burn Plan will include a smoke management section that outlines site-specific considerations and procedures to minimize smoke disturbance. Wind direction and inversion predictions are the primary considerations in prescribed burn planning in reference to smoke-sensitive areas. Smoke modeling technology, such as the Vsmoke, a GIS-based plume model, can used to project smoke production and dispersion prior to prescribed burn implementation. The models are limited by the accuracy of the weather forecast, so on-site observations will be used to determine if the wind direction and dispersion factors still favor implementation of the planned burn. A test fire ignited prior to the entirety of the burn block can provide additional information for the prescribed burn boss to make a go/no-go decisions based on smoke management and fire intensity requirements.

[redacted]

VDEQ Air Regional Office will be notified of daily prescribed burning activities occurring on the installation. As needed, the media and public alert systems will be kept informed and updated through the installation PAO.

1.16.2 *Smoke Hazard Monitoring*

During the course of a prescribed burn, personnel will be instructed to remain aware of smoke conditions and notify the Prescribed Burn Boss or IC of any observed smoke concerns or hazards, such as smoke on roadways. The Prescribed Burn Boss or IC may assign a patrol to monitor road conditions within the vicinity of the prescribed burn and on local roads. Any smoke complaints or comments received by the PAO, DES, DPTMS, or DPW/ENRD during a prescribed burn or wildfire event should be relayed to the Prescribed Burn Boss or IC.

1.16.3 *Smoke Hazard Response and Mitigation*

If a smoke issue is likely to occur or has been identified, several actions can be taken to mitigate the situation a safely and quickly as possible. Signage warning of prescribed burn activities and smoky conditions on roadways can be posted prior to or during prescribed burn activity or wildfire event. DES support may be requested to provide traffic control on installation roads and the VDOT and/or Virginia State Police may be contacted for smoke impacting public roadways.

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2.0 WILDFIRE RESPONSE AND MANAGEMENT

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2.1 WILDFIRE RESPONSE PROCEDURES AND RESOURCES

Coordination, in advance of a fire event, is vital for appropriate fire response. Response criteria are dependent upon the severity, scope, and expected impact of the fire activity and applicable regulations for protecting the personnel, property, installation mission, and natural resource assets at the installation. The established response criteria are considered guidelines that may be modified based upon prevailing conditions and resource availability. The procedures create a repeatable standard intended to be integrated as a standard operating procedure that is understood by all stakeholders. Appropriate response level will be derived by observation of the environmental conditions and potential for spread or severe impact of the fire on Fort A.P. Hill or public assets or activities.

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2.1.2 *Duties and Responsibilities*

The duties and responsibilities of identified installation directorates and components involved in wildfire control are outlined in Table 2-1. These duties refine or are in addition to those outlined in Section 1.4 of this plan.

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2.2.1 *Wildfire Assessment and Firefighter Safety*

Once a wildfire has been reported and initial incident response has begun, observations by response personnel on the way to the incident will provide information on expected fire behavior, required suppression efforts, and firefighter safety. The ability to determine both the tangible and intangible assets to be protected and to balance the protection of such assets against current or expected fire weather and fuel conditions and available firefighting capability may be the most difficult portion of wildfire assessment. The safety and security of fire response team members must come first and foremost when evaluating the situation. Response personnel should have constant awareness of the 10 Fire Orders and the 18 Watch Out Situations (Appendix O).

Response personnel incorporate their knowledge of the fire area and how current conditions compare to past experience. They will also consider the following factors in order to anticipate fire behavior, firefighter safety and resource protection:

1. Fuel and terrain
2. Weather conditions (on-site and forecast)
3. Smoke column characteristics
4. Observed fire behavior and rate of spread
5. Size of fire
6. Location of head of fire

7. Access routes
8. Resources and personnel at risk
9. Fire barriers (natural and constructed)
10. Potential water sources
11. Availability and capability of responding resources
12. Escape routes and safety zones

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2.2.2.4 *Post Suppression and Mop-up*

Once a fire has been controlled, contained or confined, the IC will ensure that all smoldering embers, snags, stumps or other fuel sources will not cross firebreaks. Patrols of the perimeter of the fire activity will continue on a regular basis until assurance of complete control is achieved. Burning stumps, roots, or snags near the fireline will be extinguished with water or soil, or otherwise safely moved away from the fireline.

In the circumstances where fireplow lines were used to establish wildfire control lines, a post-suppression evaluation will be conducted by ENRD personnel to determine the need for remediation efforts. The Virginia Forestry Best Management Practices for Water Quality (2011) will be implemented. Direct impacts to waterways and wetlands will be mitigated immediately to reduce soil erosion impacts. Any fences or barriers that were damaged or moved for access will be replaced and any other remediable impacts due to suppression activities will be addressed. DPW – Roads and Grounds Branch and DPTMS – LRAM program will complete identified remediation requirements.

2.2.2.5 *After-Action Review*

Conducting an AAR following the conclusion of suppression efforts allows for feedback from firefighters, ICs and supporting resources to identify successes or gaps in suppression tactics, communications, safety, and logistics. The intent is to leverage the AAR information to improve future response scenarios through adaptive management principles. For most response situations, conducting an AAR is optional. However, an AAR will be implemented following an incident that involved serious injury, significant equipment damage or destruction, where an installation fire escapes onto private property, or when the EOC was stood-up in support of the incident.

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3.0 PRESCRIBED BURNING

Fort A.P. Hill Forestry Branch conducts large-scale (15-20,000+ acres) prescribed burning on an annual basis to decrease the fuel hazards in order to reduce fire risk. Reduction of wildfire occurrence results in decreased range shut-down and optimizes live-fire training availability on the installation. Prescribed fires also create more open understory conditions improving forest setting accessibility and maneuverability of military units during training operations. Forestry also conducts prescribed burning in conjunction with silvicultural activities such as site preparation following a shelterwood or seed tree harvest, to control hardwood encroachment in pine stands, or to foster oak regeneration in hardwood stands. Additional ecological benefits of prescribed burning include, but are not limited to, nutrient recycling, herbaceous vegetation re-growth and establishment, reduction in understory density to benefit wildlife habitat, increases species diversity, assistance in seed germination, reduced heavy forest litter encouraging regeneration and herbaceous plant growth, can be used in disease and invasive plant species control, and contributes to the establishment and maintenance of native grass and wildflower communities. Species that receive direct benefit from fire-managed habitats include: bobwhite quail, wild turkey, white-tailed deer, yellow-breasted chat, field sparrow, eastern towhee, eastern cottontail rabbit, golden-winged warbler, and many more. Though military training needs and land use requirements constitute the driving force behind the application of wildland fire management on this landscape and the need for this plan, multiple benefits are realized by the inclusion of fire on the landscape as it mimics a natural disturbance regime within the larger ecosystem.

The Installation Forester is the Prescribed Fire Program Manager in relation to prescribed burn planning, decisions, coordination, implementation, and monitoring. The following sections describe the procedures required for planning, prescribing, preparing, executing, and evaluating prescribed burns.

3.1 PLANNING AND APPROVAL PROCEDURES

Due to the innate complexity of using fire for land management and due to the potential resource loss and environmental impacts if fire is misused, a set of procedures has been established to direct planning and coordination efforts for safe, appropriate, and successful application of prescribed fire. The following activities will be performed for prescribed burns occurring on Fort A.P. Hill.

The implementation of prescribed fire requires knowledge of fire behavior, suppression techniques, and environmental effects of fire and will only be applied by those trained in its use. Proper prescription, detailed planning, and a high level of programmatic coordination are needed for every area where prescribed burning is contemplated.

Upfront analysis needs to be performed across the installation landscape to determine which areas require wildland fire to meet a given land management objective. Potential prescribed burn sites are selected based on identified need and prioritized based on a perceived risk and/or land use specifications. Table 3-1 summarized the decisions system used to select and prioritize prescribed burn sites on the installation.

[redacted]

Once prescribed burn sites have been identified and select, a proposed Annual Prescribed Burn Plan is completed well in advanced of the prescribed burn season (Appendix P). This plan documents the types of burns to occur in the upcoming year with related objectives, timing, and the desired fire intensity as related to FDR classification. The plan is supplemented with maps showing the location and objectives of each planned prescribed burn site on the installation, the proposed burns in relation to identified environmental concern areas, and the proposed burns in relation to identified military training resource concerns. The plan with the maps is staffed through, DPW, ENRD, DPTMS, DES (Fire Department), and final approval is reserved for the Garrison Commander.

Prior to the initiation of any prescribed burn a Site Safety and Health Plans for the TA and Range Complex burns, a weather risk assessment, a hot-work permit, and a written, site-specific Prescribed Burn Plan will be completed. The Site Safety and Health Plan outlines the potential health and safety hazards related to prescribed burning activities in either the TAs or in the CAs and impact areas. The assessments will determine initial risk levels and the residual risk levels after controls are implemented. Personnel from DPW, DPTMS or DES that are directly involved in prescribed burning activities are to review and sign the Site Safety and Health Plans biannually prior to the commencement of burning.

High-priority burn areas will be scheduled in advance within RFMSS to ensure access to the area and that training personnel and equipment are not at risk. DPTMS and DES will be notified of the intent to burn as far in advanced as possible to the planned activity. It is recognized that prescribed burning is subject to variations in weather patterns making scheduling and advanced planning difficult.

AR 420-1 requires that a hot-work permit (DA Form 5383) be submitted to the DES Fire Department for any hot-work conducted by installation personnel or contractors while on the installation. The Operational Safety and Health Administration (OSHA) define hot-work as riveting, welding, flame cutting, or other fire or spark-producing operation. Forestry Branch completes and faxes DA form 5383 to the Fire Department on the morning of planned prescribed burns. The form will indicate the date, location, and approximate time that each burn will take place. The signed form will be maintained on-site of the burn by Fire Department personnel and filed for record following the completion of the burn.

The Garrison Commander will have approval authority for prescribed fires that will be implemented without the direct support of Fire Department personnel.

The daily Prescribed Burn Plan addresses site location, preferred and actual weather conditions, required personnel and equipment, smoke management considerations, fuel conditions and considerations, objectives and strategy for each prescribed burn, and planned mop-up activities. In addition, the plan will provide a post-burn success evaluation, map of the burn block with pre-identified safety zones and other safety considerations, a notification list, and the signature of the preparer.

A sample Prescribed Burn Plan, Site Safety and Health Plan, Fire Weather Risk Assessment, and Hot-work Permit can be reviewed in Appendix Q.

To ensure that there is no unintended impact made on natural resources as a result of prescribed burning, a NRSA is performed for each prescribed burn block and related firebreaks. The NRSA provides all natural and cultural resource managers a review period to examine and survey each prescribed burn block. The assessment involves both desk-top and field surveys, including cultural resource surveys of all new firebreaks. This process allows for documentation of an appropriate environmental review and allows the Prescribed Burn Program Manager to adjust plans as needed to address resource considerations.

3.2 PRESCRIPTION DEVELOPMENT AND FIRING TECHNIQUES

The frequency, duration and intensity of the prescribed burn dictate the magnitude of the impact to the ecological characteristics of the area. Burning can be most efficiently and effectively performed if a regular cycle is established that will allow appropriate build-up of fine fuels available to carry the fire through the entire prescribed burn area. The technique and pattern of applying fire, with given fuels, weather, and topographic conditions, can determine the duration and intensity of the fire (Table 3-2). The burn block prescription and related firing technique chosen must be correlated closely to the burn objective; with consideration given to the fuels, weather, and topography of the different.

There are several standard prescribed burn objectives that occur on the installation. The general purpose, desired fire intensity, season, and FDR classification for each objective type is as follows:

1. Range and Impact Areas Fuel Reduction:
   This objective requires the use of moderate intensity fire to reduce fuel accumulation, decreasing the risk of wildfire caused by live fire training. This will result in minimizing disruption of live-fire training caused by wildfire suppression activities. It will also reduce the risk of wildfires escaping from the Impact Area. Prescribed burns can be implemented

any time during the burn season from 1 October to 15 April. The prescribed FDR classification can range from Moderate to Very High.

2. Forest Stand Fuel/Debris Reduction:
   This objective requires the use of low to moderate intensity burns to reduce the fuel load in pre-commercial thinning blocks and other areas where there is an accumulation of fuel or logging debris. Reducing the available fuel will prevent severe losses in the event that a wildfire occurs in these areas. Prescribed burns can be implemented any time during the burn season from 1 October to 15 April. The prescribed FDR classification can range from Low to Very High.

3. Wildlife Conservation Area Management:
   This objective requires the use of moderate intensity fire to stimulate growth of native herbaceous vegetation including warm season grasses while reducing dead vegetation buildup to benefit wildlife, including quail and songbirds. The preferred season for implementation is 1 February through 1 April. The prescribed FDR classification can range from Moderate to Very High.

4. Oak Regeneration and Site Improvement:
   This objective requires the use of moderate intensity fire to reduce competing vegetation to favor oak seedlings and saplings, and to prepare a seedbed for oak and pine regeneration. The purpose is to encourage the successful establishment of other fire-tolerant tree species by controlling competing vegetation with fire. The preferred time for implementation is near leaf-out in spring from about 1 April through 30 April. Growing season (15 July – 31 August) burns may be used on select sites where greater control of competing vegetation is required. The prescribed FDR classification can range from Moderate to Very High.

5. Vegetation Control and Forest Accessibility:
   This objective requires the use of moderate to high intensity fire to control underbrush and other vegetation for improvement in visibility and accessibility to these sites for training and to control non-native, invasive plant species in specified areas. The preferred season for implementation is 1 January through 15 April. The prescribed FDR classification can range from Moderate to Very High.

Table 3-2. Fuel Types and Related Firing Techniques

Burn Site Description	Utilization
Grassland	Broadcast burning of highly volatile fine fuels of grasses and low woody vegetation for fuel risk reduction, wildlife habitat improvement, and pine/oak savannah maintenance. Use flank, back, and/or head firing techniques in a strip or ring pattern.
Dispersed Slash	Broadcast burning of woody debris of fine, medium and heavy fuels and debris left on the ground following timber harvest operations and is accomplished to prepare sites for reforestation, to improve aesthetics, or to reduce obstacles to foot travel. Use flank, back, and/or head firing techniques in a strip, spot or ring pattern.
Forest Understory Burn	Understory burning applied to stands containing fine and medium fuels to reduce competition from undesirable vegetation and to improve habitat for wildlife and accessibility for soldiers. The intent is to produce a fire intensity suitable to kill seedlings and saplings with minimal damage to mature timber. Flank or back firing techniques from perimeter with a strip or spot pattern can create the desired results. Interior strip and spot lighting will ensure a more thorough burn and will decrease burn and smoke production time.
Piled Slash	Burning of woody debris of fine, medium or heavy fuels that have been piled, normally by bulldozer, following a timber harvest or construction job. Fuel and fire is applied directly to the pile.

Though the majority of prescribed burns on Fort A.P. Hill are ignited using handheld ATV–mounted drip torches using a gasoline/diesel mixture, other ignition sources and techniques are available. Alternative firing equipment include, but are not limited to matches, fusees, Very pistols, pneumatic torch, propane torch, blivet, Terra-torch, canisters, helitorches, and plastic sphere dispenser (Pyroshot). The use of a variety of firing equipment is acceptable on Fort A.P. Hill with proper training, permissions, and justified use. Additionally, a variety of firing techniques may be required to meet all stated prescribed burn objectives in a safe and effective manner.

3.3 PRESCRIBED BURN PREPARATION

Prescribed burn implementation requires extensive preparation. The following decision factors and logistical requirements must be completed prior to the implementation of any given prescribed burn:

Administrative:

- NEPA documentation complete (Section 1.8.1)
- Burn block is included on the approved annual burn plan (Section 3.1)
- NRSA review is completed (Section 3.1)
- Site Safety and Health Plan (SSHP) is reviewed and signed by participating prescribed burn personnel (Section 3.4.1)
- Prescribed Burn Plan completed and signed (Section 3.1)
- Prescribed Burn CRM form completed and signed (Section 3.3.2)
- (Continued on next page)

- Hot-work Permit completed and signed (Section 3.1)
- Notification checklist completed (Section 1.11)

[redacted]

The following sections describe the requirements listed above that were not already discussed in previous sections, as indicated.

3.3.1 *Pre-Burn Weather Forecast*

Pre-burn weather monitoring is the responsibility of the Prescribed Burn Manager (Installation Forester). Limits of air temperature, humidity, wind velocity, wind direction and fuel moisture are used in calculating the fire spread index and related FDR. This information is then considered by the Prescribed Burn Manager to determine the appropriate prescribed burning site and technique to attain desired results based on knowledge of fire behavior.

Sources of fire weather information include:

- NOAA's National Weather Service
- Local and on-site observations (e.g., on-site weather stations, belt weather kit, etc.)

Table 3-3 contains general weather conditions that are utilized as guidelines for determining the advisability of initiating burn activity in any given area.

Table 3-3. Weather Condition Parameters for Site Preparation and Growing Season Prescribed Burn Initiation

Weather Factor	Maximum	Minimum
Temperature (in degrees Fahrenheit)	90[1,2]	32
Relative Humidity	65%[3]	20%[4]
Wind Speed at 20 feet	16 mph[5,6]	5 mph
Mixing Height	NA	500 meters
Cumulative Severity Index	500[7]	NA
Ventilation Factor (Mixing Height x Transport Wind)	NA	2000

[1] Higher temperatures may be permissible, but risk increases for heat stress and heat stroke for personnel involved in controlling the burn activity.
2 Maximum temperature for non-site prep and dormant season burns should not exceed 60 degrees.
3 Maximum humidity for non-site prep and dormant season burns should not exceed 55%.
4 Minimum humidity for non-site prep and dormant season burns should not go below 20%.
5 Maximum wind 16 mph – gusts up to 20 mph.
6 For non-site prep and dormant season burns, CSI is not to exceed 300.

3.3.2 *Composite Risk Rating and Signing Authority*

A CRM form (Appendix Q) is also utilized to consider the relative risk of the forecasted weather conditions, predicted FSI, personnel and resource availability, estimated Fire Department response time, and smoke management considerations. This worksheet considers the combined factors to classify prescribed burn risks as Low, Moderate, High, or Extremely High. The weather factors are obtained from the weather information sources listed above are documented on the daily CRM form. Table 3-4 demonstrates the weighting of weather factors to determine the risk level.

CRM signing authority is determined by the resulting risk rating and the proponent for the prescribed burn. The ENRD Chief or the DPW Director will sign for forestry or wildlife management burns with a Low or Moderate risk, respectively. The Range Control Officer or the DPTMS Director will be the signing authority for Range Complex, vegetation management, or tenant facility burns with a Low or Moderate risk, respectively. The Fire Chief will be the signing authority for any burns with a High risk rating. The Garrison Commander will have sole signing authority for burns resulting in an Extreme risk rating. As a general rule, prescribed burning will not take place on days characterized by High or Extremely High combined risk rating unless a special need is identified and approved by the Fire Chief and/or Garrison Commander respectively. Signing authority may only be moved laterally or up within the installation organization.

If the weather conditions observed at the prescribed burn site prior to ignition operations differ from the forecast conditions and the CRM risk rating for the burn would be categorically increased, then the CRM form would need to be updated and resubmitted for signature at the appropriate agency approval level. This is not implemented for prescribed burns that are already in-progress.

Table 3-5 shows the process for determining the combined weather risk and the party responsible for serving as the agency administrator for signing the Prescribed Burn CRM form according to risk level and for giving final authority for the execution of the prescribed burn.

The Garrison Commander will have sole burn approval and signing authority for any prescribed burns implemented without direct (on-site) Fire Department support. This decision will be made following a joint meeting between the Garrison Commander, Fire Chief, Prescribed Burn Boss, and Director of DPTMS to evaluate the risks and benefits of implementing the proposed burn. The Garrison Commander may prioritize prescribed burning support over conflicting Fire Department tasks in order to implement a prescribed burn with adequate on-site support.

[redacted]

In the circumstance that weather conditions observed at the burn site contradict forecasted conditions, the decision to conduct or continue the prescribed burn will be reevaluated by the on-site Prescribed Burn Boss. Prescribed burns may be cancelled or extinguished as weather conditions warrant. Test burns conducted prior to the implementation of the larger burn block will provide for observed fire and smoke behavior, giving the Prescribed Burn Boss additional information for final Go / No-go decisions.

When unusually dry, warm, and/or windy conditions occur, the county may implement a localized burn ban until conditions change. When a local burn ban is in effect, no prescribed burning will take place.

3.3.3 *Prescribed Burn Notification Procedure and Requirements*

When the forecast fire weather parameters are within prescription and areas are available for prescribed burning, the Prescribed Burn Boss will contact the Fire Department to determine availability of personnel for direct, on-site support. If the Fire Department is available, then the Prescribed Burn Notification Roster (Appendix E) is initiated. If the Fire Department is not available and the Prescribed Burn Boss determines that there are adequate resources to conduct the prescribed burn without on-site Fire Department support, a meeting will be schedule by the Prescribed Burn Boss to include the Garrison Commander, Fire Chief, and DPTMS Director. The Garrison Commander will consider the risks and benefits of implementing or forgoing the proposed burn and make the final Go / No-go decision. If the Garrison Commander approved the proposed burn, then the Prescribed Burn Notification Roster will be initiated.

The completed Daily Prescribed Burn Plan, site maps, NOAA fire weather forecast information, and signed CRM will be posted to the a daily prescribed burn folder created on the Fort A.P. Hill intranet. A link to the daily folder and related contents will be included in prescribed burn email notifications provided to installation personnel and directorates. Additionally the annual prescribed burn plan, SSHP (Appendix Q), complete set of burn site maps, and burn results progress map (Appendix P) will be made available on the Fort A.P. Hill intranet each year. This process maximizes burn program review and transparency and provides detailed site maps in the event emergency response is required.

3.3.4 *Personnel and Equipment Requirements*

Army regulation and guidance on wildland fire stipulate that personnel involved with wildland fire will be qualified for the position that they will hold on the fireline. Approved qualification system include NFPA and NWCG (refer to Section 1.11.2). Appropriate training and experience of personnel responsible for conducting and supervising prescribed burn activity are necessary to ensure the safety of all involved, to understand the complexities of implementing fire on large acreages in varying fuel types and weather conditions, and to understand the various methodologies of applying fire to attain the desired intensity and meet the stated objectives. Forestry Branch personnel are trained specifically in prescribed burn implementation and wildfire control and are responsible for the initiation and control of prescribed burn activity. [redacted]

[redacted]

All equipment and PPE will be checked for maintenance and/or replacement requirements prior to the beginning of the fall burn season.

PPE status and requirements will be identified in the annual fire safety training. Each directorate is responsible for the purchasing, maintenance, and life cycle replacement of the wildland fire PPE for their respective personnel.

3.3.5 *Managing Natural, Cultural, and Real Property Considerations*

Although firefighter and public safety are of utmost concern during prescribed burning operation, consideration must also be given to other resources located within or in proximity to the burn block. In the use of prescribed fire as a land management practice, it is appropriate to establish Best Management Practices that provide consideration to and appropriate protection of natural, cultural, and real property resources. The following guideline will be applied in prescribe burn block selection, prescriptions, and burning techniques:

- Wetlands:
  - All VDOF and Fort A.P. Hill Best Management practices must be followed with regards to wetlands, intermittent, and perennial streams.
  - Back-burn away from streams and wetlands in prescribed burn blocks whenever possible to minimize soil exposure near water sources.
- Wildlife:
  - Observe all bald eagle protection protocols in effect during prescribed burning activities
  - If a bald eagle nest occurs within a selected prescribed burn block, burn the block prior to November 15th.
  - Burns that occur in proximity to stands with active nest sites will apply prescription standards for wind direction that will move smoke away from nest sites during the nesting season (November 15th – July 15th).

- Threatened and Endangered Plants:
    - Prohibit all machinery and limit foot traffic within swamp pink and small whorled pogonia colonies and colony buffers.
    - Actively fight wildfires or escaped prescribed burns that threaten identified plant colonies using low-impact techniques such as handlines and wetlines.
    - Indicate colony and buffer locations of threatened and endangered plants on site maps provided to prescribed burn personnel.
- Late-Seral / Old-Growth Areas:
    - Do not include identified old-growth areas or buffers in prescribed burn plans unless specifically requested.
    - Actively protect areas threatened by wildfire when needed with low-impact techniques such as handlines or wetlines.
- Cultural Resources:
    - Coordinate prescribed burning activities with the Cultural Resources Manager to identify known cultural resources that require protection from burn activities (e.g., buildings or other above-ground features).
    - Identify features requiring special action or protection on maps provided to prescribed burn personnel.
    - Establish appropriate protection method per feature with Cultural Resources Manager (e.g., blackline, wetline, or handline).
    - Complete a cultural resources survey on all newly proposed firebreaks.
    - Apply guidance outline in the ICRMP.
- Real Property:
    - Identify all structures or other features on maps provided to prescribed burn personnel.
    - Use handline and blackline methods to protect structures from prescribed burning.

3.4 PRESCRIBED BURN EXECUTION

Once a prescribed burn plan has been approved, the weather conditions are within prescription and required logistics have been addressed, a prescribed burn can be implemented. The Prescribed Burn Boss will review the Go/No-go checklist (Appendix Q), present the ignition plan, complete a safety briefing, and will assign crew and individual task requirements. Unless crew bosses have been assigned, all communication will go directly to the Prescribed Burn Boss to inform of task completion, crew/personnel location, and fire behavior and/or weather observations. The Prescribed Burn Boss makes and approves all decisions in relation to the prescribed fire.

On-site weather conditions, including temperature, relative humidity, wind speed and direction will be collected and a test fire may be implemented to observe fire behavior and smoke dispersion and movement.

3.4.1 *Safety Considerations and Briefings*

Firefighter and public safety are the highest priority in every wildland fire management activity. In addition to required PPE, there are other safety considerations to be taken into account during prescribed burning operations. Prior to the fall and spring burn season, all personnel tasked with prescribed burn support will review and sign the SSHP developed by Forestry Branch personnel (Appendix Q) for awareness of risks and hazards associated with prescribed burn activities.

Additionally, prior to the implementation of each prescribed burn, an on-site safety briefing will address site-specific concerns, identify known safety zones, establish the communication plan, assign ignition and holding duties, identify the ignition plan, address the contingency plan and communicate current and expected weather conditions. Each participant is provided a pocket card that summarizes this information (Appendix Q). Each participant or crew is provided a site map and copy of the ten Standard Firefighting Orders and eighteen Watch Out Situations. A map to be used in the event of an escaped prescribed fire where a contingency plan has been implemented is provided at the beginning of the burn season and is intended to be kept in each prescribed burn or response vehicle. The map is based on the MIM and depicts the roads and the areas included in the annual prescribed burn plan to assist in suppression vs. "let burn" decisions.

Additional safety precautions are as follows:

- All prescribed burn personnel will have a radio, cell phone, or other reliable means of communication or will be within voice proximity to someone who does.
- No personnel will enter a known dudded area for any reason.
- Personnel firing along the boundary of known dudded areas will be informed of the risk and will be provided specific instructions as needed.
- If personnel identify UXO in a firebreak or other non-dudded area, the location will be marked from a safe distance and Range Control will be notified.
- A firefighter will verbally repeat instructions they receive to ensure clear communication.
- A firefighter may refuse any instructions that they are uncomfortable performing, as in unfamiliar terrain or unknown location of fire.
- A firefighter will carry out instructions exactly as given by the Prescribed Burn Boss or Crew Boss and will not act under their own authority unless a safety concern arises. Such concerns will be communicated immediately.
- Safety zones, meeting points and escape routes will be identified prior to the commencement of prescribed burning activities to be used in the event of an emergency.
- Risk assessments performed for fireplow transportation and use, ATV use, and chainsaw use, all of which apply to the prescribed burning environment are on file and available for review in the Forestry Branch office.
- All personnel will be issued a fire shelter. Those personnel performing interior ignition operations or handline construction off of an established road or trail will wear their fire shelter.
- Range Control personnel will notify units training on Fort A.P. Hill of expected prescribed burn activities.

3.4.2 *Contingency Plan and Declaring a Wildfire*

In order to be prepared for the possibility of the prescribed burn escaping established control lines, a contingency plan will be determined prior to prescribed burn execution and communicated to on-site personnel. In the event of an escape that cannot be quickly (15-20 minutes) extinguished by one brush truck crew, the Prescribed Burn Boss will cease prescribed firing operations and all available on-site personnel will perform initial attack. The Prescribed Burn Boss or highest qualified individual will serve as the IC until relieved. If on-site resources are not adequate, contingency resources will be ordered from the Fire Department and/or Roads and Grounds as needed through the Fort A.P. Hill dispatch.

Range Control will be notified immediately of any escape that occurs in a training area not scheduled for prescribed burning. Prescribed burn personnel will communicate the anticipated control difficulty or timeline. Range Control will be updated upon successful containment of the fire in the adjoining training area. The Garrison Commander will be notified of the implementation of the contingency plan if a fireplow or other heavy equipment is being deployed for containment.

The Prescribed Burn Boss may decide to allow the escaped fire to burn in the adjoining area if the area is on Fort A.P. Hill property, has already been included on the approved annual prescribed burn plan, Range Control has confirmed that no one is occupying the area, and existing roads and trails are sufficient for containing the expanded area.

If a contingency plan has been implemented and available resources prove inadequate to contain the escape, the time since escape has surpassed a four hour period with minimal containment, or there is immediate threat to human life or real property then the prescribed fire will be officially declared a wildfire and the Fire Department will be officially dispatched, Range Control notified, Garrison Commander notified and the EOC will be established in accordance with the IEMP. The Prescribed Burn Boss will serve as Incident Commander until Fire Department arrives on-scene, at which point, a unified command will be implemented for containment and suppression.

3.5 PRESCRIBED BURN EVALUATION

Several types of evaluations will be performed following the implementation of a prescribed burn. An immediate post-burn evaluation will document the overall success of the burn in relation to the stated objectives. This includes fuel and vegetation consumption and acres burned. Additionally, any significant events that occurred such as escapes, spotting, smoke issues, injuries, or equipment damage are to be documented. More extensive and holistic prescribed burn monitoring can be implemented as described in Section 1.9. The results from these monitoring efforts will then be incorporated in future planning iterations and applied as an adaptive management process.

Though there are many benefits to performing an AAR at the conclusion of each prescribed burn, this is not currently a requirement. The AAR provides the Burn Boss and crew members an opportunity to reflect on the completed prescribed burn and provide feedback on communication and implementation for the purpose of documenting what went well and what could be improved on future prescribed burns. An AAR will be required in the event that a major escape occurred, a wildfire was declared, an injury occurred, major equipment or property loss occurred, or major smoke impacts occurred.

At the completion of the prescribed burn season, the Forestry Branch implements an AAR to identify accomplishments, equipment needs, and areas for improvement.

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4.0 IMPLEMENTATION

Implementation involves the process and procedures for carrying out wildland fire management activities to meet the military mission and the stewardship requirements defined by federal regulations. IWFMP implementation requires the integration of programmatic responsibilities, resources, and skill sets. Applying and tracking the following actions will move this wildland fire management program towards meeting the goals in this plan and result in a more effective, sustainable, adaptive program. The goals and objectives outlined in Section 1.5 have been restated to define specific action items required for the effective implementation of this plan. A spreadsheet will be developed by the plan preparer and disseminated by the first quarter of FY 2013 to assign proponents and timelines for each stated action.

Additionally, the IWFMP will be tested annually through the use of tabletop exercise (TTX) scenarios. Testing may also evolve to include a full-scale exercise (FSE) requiring multiple agency response and coordination. This level of testing and process review will identify planning, procedural, and responsibility gaps that are not adequately identified or addressed currently. Resulting procedural and responsibility changes will be incorporated into the IWFMP as they are identified.

Goal: PROTECTION

G1) Implement wildfire prevention and suppression measures to protect human life, property, installation mission completion, natural resource assets, and special ecological environments on Fort A.P. Hill from unwanted fire damage.

Objectives:

G1 – O1) Have no injuries, deaths, property losses, road closures, or undesired ecological damage resulting from wildland fire or smoke.

Action: *Report all wildfire responses and resulting damaged in NFIRS system.*

Action: *Conduct preliminary investigations for all wildfires occurring on the installation.*

Action: *Conduct an AAR for any wildland fire that resulted in serious injuries, deaths, property losses, road closures, major public smoke impacts or undesired ecological damage.*

G1 – O2) Cause no off-post damage to private lands resulting from escaped prescribed burns or wildfires along the installation boundary.

Action: *Perform annual survey of wildland fuel hazards occurring on the installation boundary and identify areas of high fuel hazard to be addressed in annual work plans.*

Action: *Evaluate the condition of and need for firebreaks occurring on the installation boundary and address needs in annual work plans.*

Action: *Implement actions described in this IWFMP, the IEMP, and installation ICS to leverage available resources and provide for safe, efficient, and effective suppression response to wildfires that are or may threaten private property.*

G1 – O3) Conduct annual prescribed burns on the Range Complex during the dormant season to reduce the loss of training time due to wildfire-related range shutdowns.

Action: *Incorporate Range Complex fuel reduction burns into the annual prescribed burn plan.*

Action: *Schedule two-week access periods to portions of the Range Complex during the fall and spring fire seasons.*

Action: *At conclusion of the two-week fall and spring range-access periods, evaluate progress and determine if there are any remaining high-priority sites that will require special scheduling.*

Action: *Track annual training time lost resulting from wildfire activity to determine effectiveness of prescribed burn program.*

G1 – O4) Ensure Range Control, Fort A.P. Hill tenant organizations and training units are aware of the daily Fire Spread Index, Wildfire Hazard Rating and resulting munitions utilization guidelines.

Action: *Calculate and report the daily FDR during the work week and provide estimates for weekends and holidays.*

Action: *Post placards and notify training units of the daily FDR and any resulting munitions limitations.*

Action: *Evaluate current FDR system for adequacy compared to implementation of the NFDRS for potential improvement of fire danger estimation.*

Action: *Become familiar with remote access weather station outputs and software to calibrate indices to best represent conditions experienced on Fort A.P. Hill.*

Action: *Develop and provide educational and awareness materials regarding the FDR during unit in-briefing.*

G1 – O5) Protect all natural and cultural resources, to the extent feasible, through a program of resource awareness, fire prevention, low-impact suppression, and post-action restoration.

Action: *Provide a Sensitive Environmental Resources map to fire response and prescribed burn planning personnel annually.*

Action: *Avoid use of mechanized equipment for control lines within 100 feet of streams, creeks, and wetlands when and where safe to do so.*

Action: *Evaluate new firebreak locations prior to installation for each prescribed burn period.*

Action: *Evaluate post-wildfire rehabilitation needs within one week of wildfires that required fireplow utilization.*

Action: *Develop work plan to re-contour, build water control structures, or seed control lines as needed.*

Action: *Immediately apply any changes that occur to the installation RPA policy within the INRMP.*

Action: *Exclude fire and avoid smoke impacts in bald eagle nest sites and management buffers.*

[redacted]

[redacted]

G1 – O7) Implement established fuel management techniques to reduce risk of high-intensity wildfire in identified high-risk areas.

Action: *Identify high-risk areas.*

Action: *Determine most cost-effective and safe means of fuel control*

Action: *Include requirements in annual work plans.*

[redacted] – O8) Maintain an installation firebreak system that can be utilized to access and protect identified real property, natural and cultural resources, and adjoining private lands.

Action: *Perform holistic evaluation of the entire Fort A.P. Hill firebreak system*

Action: *Evaluate the condition of and need for firebreaks occurring on the installation boundary and address needs in annual work plans.*

Action: *Perform NRSA surveys for all proposed new firebreak work.*

[redacted]

Goal: LANDSCAPE MANAGEMENT

G2) Use fire as a landscape management tool to support installation land management plans by enhancing military training mission flexibility and allowing fire, a recognized natural source of ecological balance, to fulfill its role and accomplish natural regeneration objectives.

Objective:

G2 – O1) Reduce understory densities in forested areas improve accessibility and the quality of training lands within the installation to allow tenant and visiting military units to maintain a high level of combat readiness.

Action: *Identify areas requiring understory management for training unit accessibility.*

Action: *Incorporate identified vegetation management areas in the annual prescribed burn plan.*

Action: *Evaluate the success of prescribed burn application in meeting or maintaining desired understory requirements as through photo-point monitoring or other evaluation techniques.*

G2 – O2) Conduct site preparation burns one to two years post-harvest to reduce logging debris, improve accessibility and prepare the seed bed for regeneration.

Action: *Track harvest completion to identify sites requiring post-harvest site management.*

Action: *Incorporate post-harvest areas in the annual prescribed burn plan.*

G2 – O3) Utilized prescribed burning to help create and maintain the desired off-road maneuver network across the installation.

Action: *Finalize location of the desired off-road maneuver network.*

Action: *Apply prescribed burn actions identified in the Installation Vegetation Management Plan (in-development, 2012).*

G2 – O4) Utilize prescribed burning to favor oak regeneration establishment and to manage fire-maintained, early-successional wildlife conservation planting areas.

Action: *Identify areas requiring prescribed fire to meet ecological objectives and incorporate sites in the annual prescribed burn plan.*

G2 – O5) Use established methodologies to conduct annual burn program monitoring to document vegetative response to wildland fire including native and non-native species. Summarize and report results annually.

Action: *Identify data and related information requirements.*

Action: *Implement methodologies currently in-place and research additional, appropriate methodologies that may capture an identified data gaps.*

Action: *Create an appendix within the IWFMP to present summarized monitoring results and implications.*

G2 – O6) Conduct annual reviews of the installation land management plans, including, but not limited to the Integrated Natural Resources Management Plan, Integrated Vegetation Management Plan, Endangered Species Management Plan(s), and Integrated Pest Management Plan to incorporate management goals into the wildland fire program.

Action: *Develop review schedule in line with management plan annual updates to remain informed of changes and new requirements.*

G2 – O7) Coordinate with the installation Range Control Officer and ITAM personnel to determine areas on the installation to be fire-maintained and incorporate into the annual prescribed burn plan.

Action: *Leverage the monthly Range Control – ENRD coordination meetings to develop and review the annual prescribed burn plan.*

G2 – O8) Coordinate with Fish and Wildlife program managers to create a fire-maintained habitat regime encouraging native vegetation and improving rare wildlife habitats for ground nesting birds.

Action: *Include specific management objectives within the INRMP.*
Action: *Incorporate burn requirements in the annual prescribed burn plan.*

Goal: INCIDENT MANAGEMENT

G3) Efficiently contain each wildfire occurring on the installation through effective cross-directorate/agency communication, operational-ready equipment, technology and personnel, and appropriate span of control for the incident commander and delegates.

[redacted]

Action: *Test selected methodologies during prescribed burn implementation.*

G3 – O7) Use GPS technology to record the boundaries of wildfires within 72 hours of the conclusion of the incident.

Action: *Maintain functional GPS data collection and processing system.*

G3 – O8) Evaluate fire modeling and enterprise incident management decision support systems or other tools for more effective incident management and fire and resource tracking abilities.

Action: *Identify available software and systems.*

Action: *Evaluate ease of integration, data requirements, and develop a cost-benefit analysis.*

Action: *Determine funding mechanism for desired system, if any.*

[redacted]

G3 – O10) Evaluate all wildland fire tools and equipment for operational readiness prior to the start of each annual burn season and inform the installation Fire Chief if significant equipment (e.g., dozers, graders, etc.) is not operational.

Action: *Schedule pre-fire season equipment preparation day.*

G3 – O11) Document each wildfire and prescribed burn activity requiring Fire Department involvement in the NFIRS including damage/loss assessments.

Action: *Solicit real property, targetry and timber value loss estimates as needed.*

G3 – O12) Investigate each reported wildfire to establish ignition location and source.

G3 – O13) Clarify the interaction of Fort A.P. Hill with the VDOF for wildfire suppression on and off the installation.

Action: *Develop working group with legal, resource management, and personnel knowledgeable in fire response requirements to develop an interagency Memorandum of Agreement.*

Action: *Define financial responsibilities and liabilities.*

Action: *Define the role of VDOF for on-installation and off-installation support.*

Action: *Clarify support request procedure.*

Action: *Clarify limitations and notification procedure for VDOF installation access.*

Goal: SAFETY

G4) Above all else, provide for firefighter, military personnel, and public safety.

Objectives:

G4 – O1) Maintain fire management qualifications for all firefighters and fire managers and ensure all personnel assigned to those positions are trained to a level appropriate for their expected duties.

Action: *Clearly communicate training requirements per position type to each supervisor of wildland fire personnel.*

Action: *Schedule a joint meeting of stakeholders to evaluate and determine the most effective means of wildland fire qualifications for Fort A.P. Hill personnel.*

G4 – O2) Develop mechanism for continued firefighter education as through training memorandums of understanding with USFS and VDOF to ensure availability of high-quality training to meet NWCG standards.

Action: *Determine regional agencies requiring NWCG qualifications and solicit interest in mutual training objectives.*

Action: *Include training costs for wildland fire personnel in annual budget requests.*

Action: *Evaluate benefits of participating on the Virginia Prescribed Burn Council.*

G4 – O3) Ensure wildland fire Job Hazard Analyses (JHA) and Risk Assessments are reviewed and updated annually.

Action: *Cross-reference existing JHAs and Risk Assessments for applicability and duplication.*

Action: *Work with Safety Officer to ensure centralize location for electronic wildland fire JHAs and Risk Assessments.*

G4 – O4) Complete a Site Safety and Health Plan for prescribed burn personnel prior to the fall and spring burn seasons.

Action: *Provide electronic copy of document and associated maps for all wildland fire personnel.*

Action: *Append updated Site Safety and Health Plans to the IWFMP.*

G4 – O5) Ensure personnel are issued appropriate wildland fire PPE and that all wildland fire vehicles and equipment are in proper working order.

Action: *Determine need and purchase wildland fire PPE and gear bags for all wildland fire Roads and Grounds personnel.*

Action: *Determine need and purchase wildland fire PPE and gear bags for all wildland fire Range Control personnel.*

G4 – O6) Engage RFMSS and the Fort A.P. Hill Fire Desk to ensure no personnel are within prescribed burn areas and that ranges go into cease-fire as needed for wildfire response personnel.

Action: *Check RFMSS daily on prescribed burn days.*

Action: *Coordinate all Range Complex fire response actions with the Fort A.P. Hill Fire Desk.*

G4 – O7) Inform VDOT if hazardous travel conditions exist or are expected to occur, as due to smoke, on surrounding public roadways.

Action: *Assign personnel to monitor smoke and road conditions on prescribed burn and wildfire activity.*

Action: *Ensure Fort A.P. Hill dispatcher is informed of hazardous smoke conditions and location of potential travel hazard for appropriate response coordination.*

G4 – O8) Post signs along highly-travelled installation roadways to warn travelers of potential smoke during prescribed burn operations.

Action: *Ensure appropriate number of signs are available and in operational condition prior to the start of the fall fire season.*

G4 – O9) Utilize established smoke management techniques to minimize the number of prescribed burns generating smoke complaints.

Action: *Forestry Branch to coordinate with PAO to document prescribed burns that generate smoke complaints.*

Action: *Encourage continued education of prescribed burn personnel in smoke management and advanced weather considerations.*

Action: *When a smoke-related issue has been communicated, the prescribed burn boss will take action to safely cease ignitions or finalize burn-out.*

Action: *Include VSmoke (or other smoke dispersion model) output map in daily Prescribed Burn Plan based on forecast weather and expected fuel conditions.*

G4 – O10) Evaluate the incorporation of complexity ratings of each prescribed burn plan site to determine appropriate staffing and qualifications of participating personnel by 2015.

Action: *Assign appropriate personnel to initiate evaluation.*

G4 – O11) Maintain accountability of all personnel involved with each prescribed burning or wildfire response.

Action: *Document on-site personnel for each prescribed burn or wildfire.*

Action: *Assign a Safety Officer or other appropriate position to track on-site resources and their locations on wildfire suppression efforts that involve multiple directorates.*

Action: *Evaluate mobile technology options.*

G4 – O12) Ensure each prescribed burn has a documented Hot-work permit prior to implementation/ignition.

Action: *Convert hardcopy Hot-work permit to fillable PDF format.*

G4 – O13) Conduct safety briefings and provide summary pocket cards prior to each prescribed burn activity.

Action: *Document the completion of safety briefings, as with a checkbox on the daily Prescribed Burn Plan.*

G4 – O14) Evaluate and assign a centralized wildland fire training and qualifications tracking entity for non-DES Fire Department personnel involved in wildland fire.

Action: *Develop working group to address centralized training and qualifications tracking for installation personnel.*

Goal: PUBLIC AWARENESS

G5) Enhance general public awareness and understanding of wildland fire occurring on the installation.

Objectives:

G5 – O1) Coordinate with the installation PAO prior to each annual burn season to produce an informational article summarizing the Fort A.P. Hill wildland fire program for publication in local periodicals.

Action: *Archive published articles relating to wildland fire on Fort A.P. Hill.*

G5 – O2) Distribute messages to the public through the Caroline Alert or other reverse-911 notification system to advise of prescribed burn or wildfire activities that may produce smoke impacts.

Action: *Ensure that PAO personnel are notified of wildland fire activities.*

Action: *Evaluate the alert systems that may be available to counties other than Caroline.*

G5 – O3) Use the AtHoc network-centric mass-notification system and internal electronic mail system to inform installation personnel, tenants, contractors, and training units of prescribed burn or wildfire activities.

Action: *Ensure that Security Office personnel are notified of wildland fire activities.*

G5 – O4) Leverage current social networking technologies to expand the educational and notification opportunities of the installation wildland fire management program.

Action: *Evaluate emerging social media options that may be leveraged for public notification.*

G5 – O5) Participate in organized public outreach events as able, such as Army Earth Day, Career Day, installation Safety Day(s), and/or outreach opportunities.

Action: *Any involved directorate prepares material in advanced that can be easily presented and disseminated as needed.*

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX A

ACRONYM INDEX AND GLOSSARY OF TERMS

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ACRONYM INDEX	
Acronym	**Reference**
AAR	**After Action Review**
AQCR	**Air Quality Control Region**
AR	**Army Regulation**
ARA	**Authorized Reimbursable Account**
ACSIM	**Assistant Chief of Staff of Installation Management**
ATV	**All Terrain Vehicle**
CA	**Controlled Access Area**
CAP	**Command Assembly Plan**
CBI	**Composite Burn Index**
CPR	**Cardio-Pulmonary Resuscitation**
CRM	**Composite Risk Management**
CWD	**Coarse Woody Debris**
DES	**Directorate of Emergency Services**
DFC	**Desired Future Condition**
DoD	**Department of Defense**
DoDI	**Department of Defense Instruction**
DOIM	**Directorate of Information Management**
DOL	**Directorate of Logistics**
DPTMS	**Directorate of Plans, Training, Mobilization, and Security**
DPW	**Directorate of Public Works**
DWM	**Downed Woody Material**
EA	**Environmental Assessment**
ECM	**Earth Covered Magazines**
eMs	**Environmental Management System**
ENRD	**Environmental and Natural Resources Division**
EOC	**Emergency Operations Center**
EOD	**Explosive Ordnance Disposal**
EQCC	**Environmental Quality Control Committee**
ESMP	**Endangered Species Management Plan**
FAPH	**Fort A.P. Hill**
FBPS	**Fire Behavior Prediction System**
FDR	**Fire Danger Rating**
FFCP	**Federal Firefighter Certification Program**
FMU	**Forest Management Unit**
FRA	**Forestry Reserve Account**
FRI	**Forest Resource Inventory**
FSE	**Full Scale Exercise**
GIS	**Geographic Information System**
GPS	**Global Positioning System**
HSQ	**Health Screening Questionnaire**
IAFC	**International Association of Fire Chiefs**
IAW	**In Accordance With**
IC	**Incident Commander**
ICRMP	**Integrated Cultural Resources Management Plan**
ICS	**Incident Command System**

IEMP	**Installation Emergency Management Plan**
IMCOM	**Installation Management Command**
INRMP	**Integrated Natural Resources Management Plan**
ISO	**International Organization of Standards**
ITAM	**Integrated Training Area Management**
IWFMP	**Integrated Wildland Fire Management Plan**
JFHQ	**Joint Forces Headquarters**
JHA	**Job Hazard Analysis**
LMR	**Land Mobile Radio**
MAA	**Mutual Aid Agreement**
MDW	**Military District of Washington**
MIM	**Military Installation Map**
MOU	**Memorandum of Understanding**
MTA	**Maneuver Training Area**
MWR	**Morale, Welfare, and Recreation**
NCR	**National Capital Region**
NEPA	**National Environmental Policy Act**
NFDRS	**National Fire Danger Rating System**
NFES	**National Fire Equipment System**
NFIRS	**National Fire Incident Reporting System**
NFPA	**National Fire Protection Association**
NIMS	**National Incident Management System**
NOAA	**National Oceanic and Atmospheric Administration**
NRSA	**Natural Resource Site Assessment**
NWCG	**National Wildfire Coordinating Group**
NWS	**National Weather Service**
O&M	**Operations and Maintenance**
PAO	**Public Affairs Office**
PBP	**Prescribed Burn Plan**
PMS	**Publication Management System**
PPE	**Personal Protective Equipment**
RC	**Range Complex**
RFMSS	**Range Facility Management Support System**
RPA	**Riparian Protection Area**
RTLA	**Range and Training Land Assessment**
SFO	**Senior Fire Officer**
SIR	**Serious Incident Report**
SITREP	**Situation Report**
SOI	**Signal Operating Instruction**
SMZ	**Streamside Management Zone**
SSHP	**Site Safety and Health Plan**
TA	**Training Area**
TTX	**Tabletop Exercise**
UFR	**Unfunded Request**
UHF	**Ultra High Frequency**
USDA	**United States Department of Agriculture**
USFS	**United States Forest Service**

UXO	**Unexploded Ordnance**
VAC	**Virginia Code**
VDEM	**Virginia Department of Emergency Management**
VDEQ	**Virginia Department of Environmental Quality**
VDOF	**Virginia Department of Forestry**
VDOT	**Virginia Department of Transportation**
VFD	**Volunteer Fire Department**

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GLOSSARY OF TERMS

Term	Definition
Attainment Area	**A geographic area in which levels of a criteria air pollutant meet the health-based primary standard (national ambient air quality standard, or NAAQS) for the pollutant.**
Air Quality	**The relative concentration of airborne particles and gases that may affect the health and well-being of organisms or disrupt the functioning of the environment**
Backfire	**A fire set along the inner edge of a fire control line to stop a spreading wildfire by reducing available fuel or a prescribed fire set to burn against the wind, resulting in a slow burn**
Best Management Practices	**Environmental resource management practices that are designed to prevent or reduce undesirable side-effects of management actions**
Biodiversity, Community (Ecosystem)	**Refers to the variety of communities or ecosystems in an area; it has three components: (a) number of parts or elements; (b) the variety of patterns or organizations; and (c) the number of ecological processes (e.g., disturbance regimes and roles played by species, etc.)**
Biodiversity, Landscape	**The number of ecosystems, or combinations of ecosystems, and types of interactions and disturbances present within a given landscape**
Blackline	**Preburning of fuels, either adjacent to a control line before igniting the main prescribed fire - blackline denotes a condition in which there is no unburned fine fuel**
Buffer	**A vegetated zone or strip of land along the border of one area to protect another area. Buffer strips of standing trees may be used to shield an area from view or to filter sediment from surface water runoff before it enters a stream**
Burn Boss	**Person responsible for managing a prescribed fire from ignition through mopup**
Canopy	**The overhead branches and leaves in a forest stand consisting of one or several layers**
Confinement (fire)	**To restrict a fire within determined boundaries**
Conservation	**The protection, improvement, and wise use of natural resources to provide the greatest social and economic value for the present and future**
Containment (fire)	**A fire management strategy used to keep a wildfire within a particular area**
Control (a fire)	**Extinguish a fire by completing control lines, burning out unburned areas, and monitoring hotspots until fire threat under prevailing conditions has been eliminated**
Control Line	**An inclusive term for all constructed or natural fire barriers; a treated (fire) edge used to control a prescribed fire or wildfire**
Cultural Resources	**Historic properties as defined in the National Historic Preservation Act (NHPA); cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA); archeological resources as defined in the Archeological Resources Protection Act**

	(ARPA); and sacred sites as defined in Executive Order (EO) 13007 to which access is provided under the American Indian Religious Freedom Act (AIRFA)
Density	**The quantity of trees, basal area, volume, or some other measure, per unit of area. Some common measures are basal area per acre or stems per acre at a given age**
Downed Woody Material	**Any piece(s) of dead wood, e.g., dead boles, limbs, and large root masses, on the ground in forest stands or in streams**
Drip Torch	**A firing device consisting of a fuel tank and wick designed to allow flaming fuel droplets to ignite vegetative fuel for use in a prescribed fire or back-burn**
Duff	**Tree and understory plant needles and leaves that constitute forest floor litter and detritus. Duff includes all soil organic horizons from fresh forest litter to very decomposed organic matter on top of mineral soil**
Ecosystem	**A spatially explicit, relatively homogenous unit that includes all interacting organisms and components of the abiotic environment within its boundaries**
Ecosystem Management	**An ecological approach to forest resource management; it attempts to maintain the complex processes, pathways, and interdependencies of forest ecosystems and keep them functioning in a sound state over long periods of time in order to provide resilience to short-term stress and adaptation to long-term change.**
Ecosystem Sustainability	**The ability to maintain diversity, productivity, resilience to stress, health, renewability, and/or yield of desired values, resource uses, products, or services from an ecosystem, while maintaining the integrity of the ecosystem over time**
Endangered Species	**Plant or animal species vulnerable to extinction throughout all or a significant portion of its range within the foreseeable future; identified in the federal register in accordance with the Endangered Species Act of 1976**
Erosion	**The wearing away of land surface by rain, running water, wind, ice, gravity, or other natural or anthropogenic agents, e.g., road construction**
Fire Behavior	**The manner in which a fire reacts to the variables of fuel, weather, and topography as in the shape, direction, and intensity of a fire**
Fire Classification	**A numerical rating system based on a calculated burn index that provides guidelines to the military on training and the allowable use of pyrotechnics**
Fire Frequency	**The number of times that a fire occurs naturally within an ecosystem or the prescribed burning rotation applied to an area**
Fire Hazard	**The ease of ignition and resistance to control of the fuel complex, determined by the volume, type, condition, arrangement, and location of fuels**
Fire Plow	**Bulldozer designed and used for mechanized installation of control lines in wildfire suppression and/or prescribed burning**
Fire Prevention	**Activities directed at reducing the number of fires that start, including public and military education and reduction in fuel**

	hazards, i.e., prescribed burning
Fire Season	**The period(s) of the year during which fires are likely to occur, spread, and do sufficient damage to warrant organized fire control.**
Fire Spread Index	**A numerical classification that integrates the effects of selected fire danger factors such as fuel moisture, relative humidity, wind, and temperature into one numerical index of current fire protection needs.**
Firebreaks	**Constructed roads designed to impede or stop forest fires by creating a discontinuity in potential fuels. Minimum firebreak width is 6 feet, the typical width of a dozer blade**
Fireline	**The part of a wildfire control line that is scraped to mineral soil**
Firing Technique	**Any of the multiple ignition patterns that may be used in a prescribed burn to attain desired fire characteristics to reach a specified resource management objective**
Forest Covertype	**A natural group or association of different species of trees, which commonly occur together over a large area (e.g., pine, hardwood, or mixed)**
Forest Health	**The perceived condition of a forest derived from such factors as its age, structure, composition, vigor, and the resilience to disturbances including insects, disease, animals, various abiotic factors, and other environmental stress (e.g., lightning, wind, fire)**
Forest Management	**The practical application of biological, physical, quantitative, economic, social, and policy principles to the administration and working of a forest for specific objectives including maintaining forest health, vigor, production, and other values such as soil condition, water quality, wildlife preservation, and, specifically, to support the military training mission on Fort A.P. Hill**
Fuel Accumulation	**A condition characterized by the buildup of woody or other vegetation that increases the risk of destructive wildfire**
Fuel Loading	**The oven dry weight of fuels in a given area, usually expressed in tons per acre**
Fuel Moisture	**The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212ºF**
Fuel Type	**An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions**
Fuels	**Plants and woody vegetation, both living and dead, that are capable of burning**
Fusee	**A red signal flare that can be used as a firing tool in prescribed burns or wildfire suppression**
Global Positioning System (GPS)	**A satellite-based navigational device that records X, Y, Z coordinates and other data allowing users to determine their location on the surface of the earth**
Habitat	**The place or natural environment of a specific plant, animal, or fungus. An area containing all the necessary resources for the plant, animal, or fungus to live, grow, and reproduce. For wildlife, habitat is the combination of food, water, cover, and space**

Handline	**Firebreak constructed by fireline personnel using fire rakes and other tools to expose bare mineral soil**
Headfire	**A fire spreading or set to spread with the wind**
Herbaceous Forage	**Vegetation dominated by non-woody plants that provide food to grazing animals**
Impact Area	**Areas designated for military training involving live ordnance; the boundaries of these areas are designated with frequent signs and no forest management activities occur within the boundaries**
Live-Fire Exercise	**Military training involving live ammunition and occurring on ranges and around impact areas**
Management Prescription	**A set of management practices and intensities scheduled for application on a specific area to satisfy multiple uses or other goals and objectives**
Military Operations	**Any mission, function, or activity related to military training**
Mop-up	**Extinguishing or removing burning material, especially near control lines after an area has burned to reduce fire escape risks or to reduce residual smoke**
NEPA (National Environmental Policy Act)	**A federal policy enacted in 1969 that established a national Council on Environmental Quality to oversee government activities that could affect the environment, and also required federal agencies to file environmental impact statements before taking any major action.**
Nomex Clothing	**Fire-protective garments made of synthetic, fire-resistant material to be worn during prescribed burning or wildfire suppression activities**
Physiographic Class	**A classification describing the terrain or landform of a management unit as it relates to soil texture, soil structure, and water infiltration**
Plow Line	**A control line that is mechanically cleared to mineral soil and used to contain wildfires or prescribed burns**
Prescribed Burn	**The application of fire in a predetermined field, forest, or other area, usually under specific conditions of weather and fuel moisture, to control vegetation for military training, silvicultural purposes, or to reduce wildfire potential**
Pyrotechnics	**Devices involved with igniting a rocket or producing an explosion and used in military training simulations**
Red Card	**Wildland firefighter qualifications document as recognized by the National Wildfire Coordinating Group certifying that in individual has met the qualifications for an identified position**
Relative Humidity	**The ratio of the amount of moisture in a given volume of space to the amount that volume would contain if it were saturated**
Riparian Area	**Area related to or located in conjunction with a wetland, on the bank of a river or stream, or also at the edge of a lake or tidewater; area influencing, and influenced by, the neighboring body of water**
Savanna (Pine)	**An area dominated by irregularly scattered, large diameter, open grown trees, with grass understory and no midstory**
Sensitive Species	**Plant or animal species which are susceptible to habitat changes or impacts from various kinds of disturbance**
Silviculture	**The art of producing and tending forest stands by applying**

	scientifically acquired knowledge to control or influence stand establishment, composition, and growth by applying different treatments to make forests more productive and useful, and integrating biologic and economic concepts to devise and carry out treatments to meet set objectives.
Site Preparation	**An activity intended to make conditions favorable for planting, direct seeding, or for the establishment of natural regeneration by clearing, chemical vegetation control, burning, disking, chopping, bedding, windrowing, raking, or some combination thereof**
Smoke Management	**Conducting a prescribed fire under suitable conditions with firing techniques that keep smoke impact within designated areas and below violations of air quality standards or within visibility protection guidelines**
Snag	**A standing dead tree from which the leaves and most of the branches have fallen**
Structural Diversity	**Refers to the variety of horizontal and vertical features of an area**
Training Area	**A designation of area within Fort A.P. Hill for military training purposes**
Understory	**The lower vegetation layers in a forest, found beneath the forest canopy (overstory), including shrubs, grasses and grass-like plants, and forbs**
Unexploded Ordnance (UXO)	**Explosive devices that have been fired, projected, dropped, or placed in such a way that they could become armed or detonate and pose the risk of injury or death to personnel in the vicinity**
Vegetation Encroachment	**The undesired growth of trees, grasses, or shrubs in designated areas such as public rights-of-way. In relation to this management plan, this term refers to vegetative growth occurring within firebreaks that would reduce functionality of the break**
Vegetation Management	**Treatments applied to control undesirable trees, shrubs, and grasses occurring in a natural setting. Techniques may be used to control invasive, exotic, or opportunistic plants for ecosystem protection and health, or, as in the case of prescribed burning, reduced vegetation densities and increased openness**
Wetlands	**A transitional area between aquatic and terrestrial ecosystems that is inundated or saturated for periods long enough to produce hydric soils and support hydrophytic vegetation – *note*: *other agencies may have more specific definitions***
Wildfire	**Any uncontrolled, non-structure fire, other than prescribed fire, occurring on lands covered wholly or in part by timber, brush, grass, or other flammable vegetation**
Wildfire Suppression	**The act of aggressively restricting the growth or spread of a fire occurring on wildlands, as with fireline construction**
Wildland Fire	**Any fire, controlled or uncontrolled, occurring on lands covered wholly or in part by timber, brush, grass, or other flammable vegetation. Wildland fire encompasses both prescribed fire and wildfire.**

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX B

WILDLAND FIRE HISTORY ANALYSIS

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Wildland Fire History Analysis

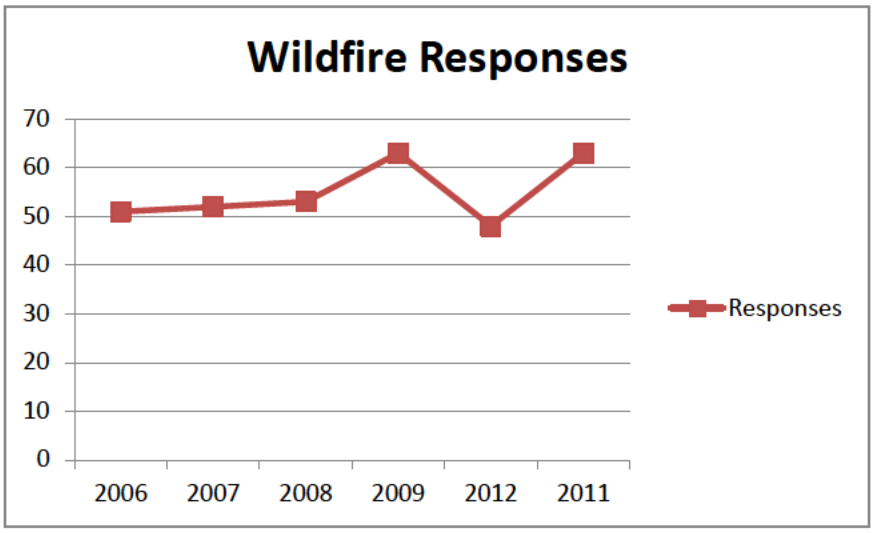
The following conveys information relative to the wildfire occurrence and prescribed burn program accomplishments. The Fire Department wildfire response by year indicates wildfires in which the Fire Department was official dispatched and does not reflect wildfires occurring in the range complex that Range Control decided to allow to burn out in a confined area and did not require Fire Department response. With continued fire data and reporting integration between DES, DPW, and DPTMS, additional analysis of wildland fire occurrence will more clearly reveal the patterns of fire on the Fort A.P. Hill landscape.

On average, the Fire Department responded to 55 fires each year over the last six years, with an average of 2,389 acres per year over the same six year period. Annual fluctuation in acreages reflects the weather conditions experienced on the installation including dry conditions and high winds experienced in on large wildfire event occurring in 2011. Total recorded acreage burned by wildfire from 2000 to 2005 was 8,565 acres while the recorded total acreage burned in wildfire in the more recent period from 2006 to 2011 was 14,336 acres. The increase in total acreage may be attributed to the increased application of a "let burn" policy in addition to favorable weather and fuel conditions.

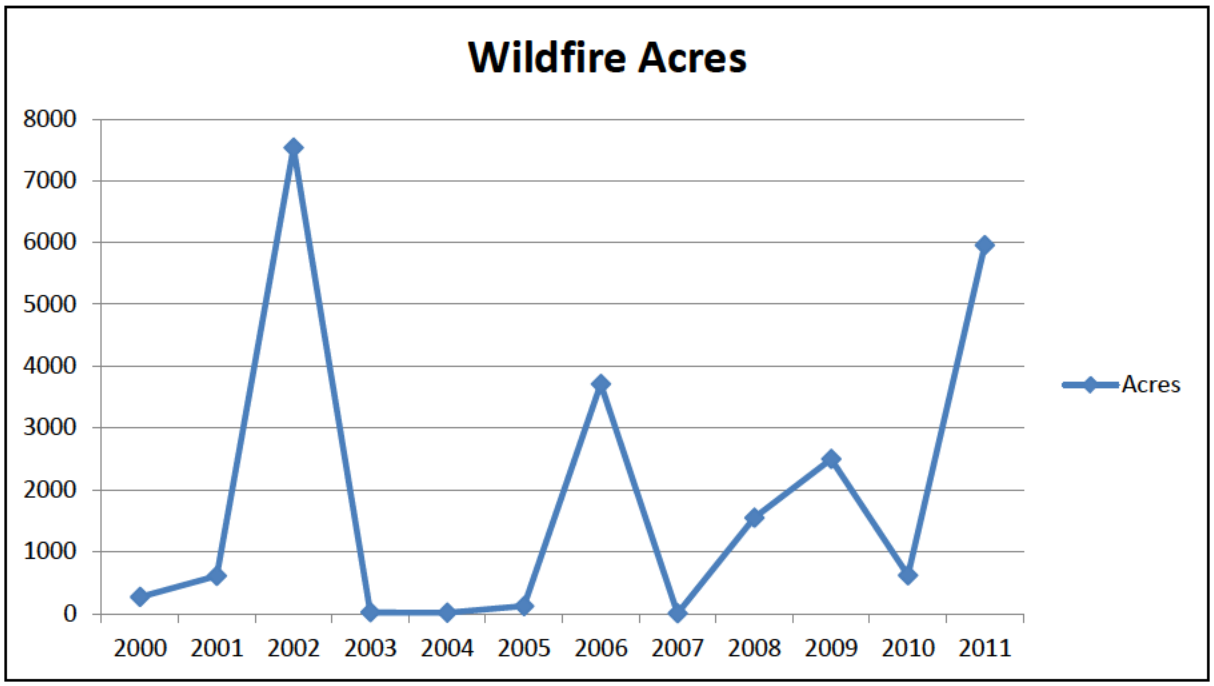
Continued data collection analysis will reveal if the installation is experiencing increased wildfire activity in both frequency and size. Comparing those results with recorded weather conditions, know fuels loading conditions, and training levels and weapon systems will provide insight to the primary factor(s) in average wildfire frequency and size. Knowing the influence of these combined factors can assist in risk assessment decision matrix utilization and prevention measure planning, including prescribed burn implementation.

The following graphs depict the number of wildfire responses reported by the Fire Department over the last six year period and the total Fort A.P. Hill acreage burned by wildfire activity over the last twelve-year period as recorded in the Forestry Branch GIS.

Fire Department wildfire response by year:

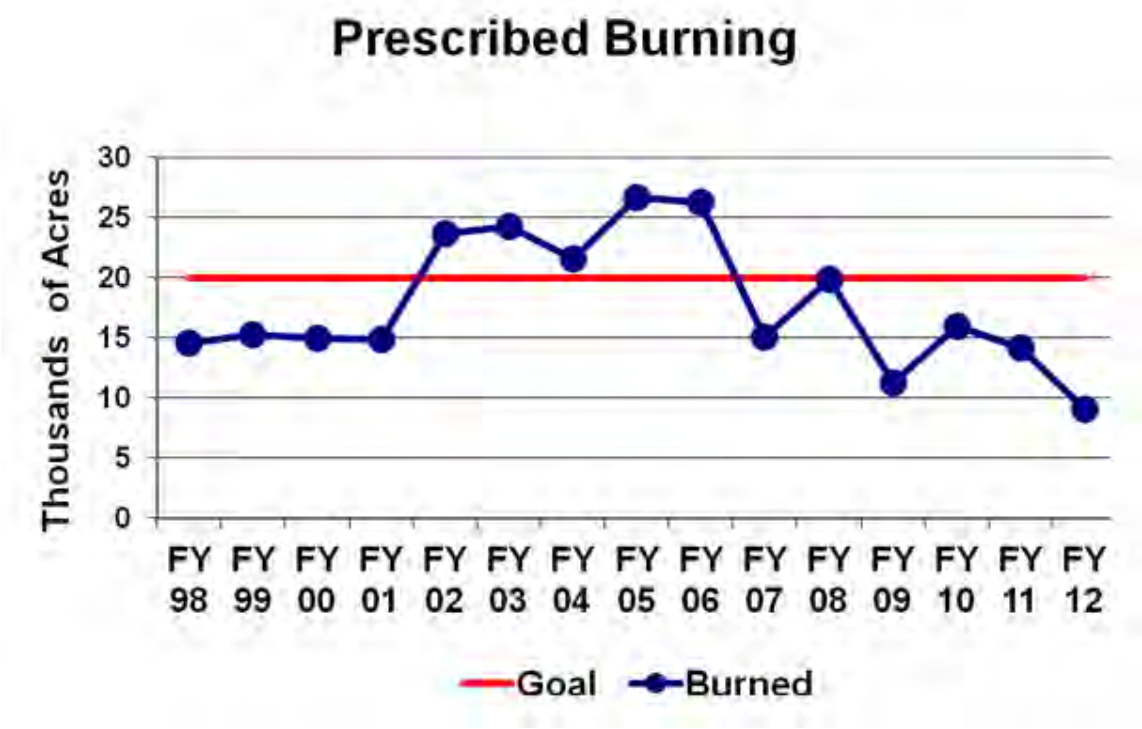


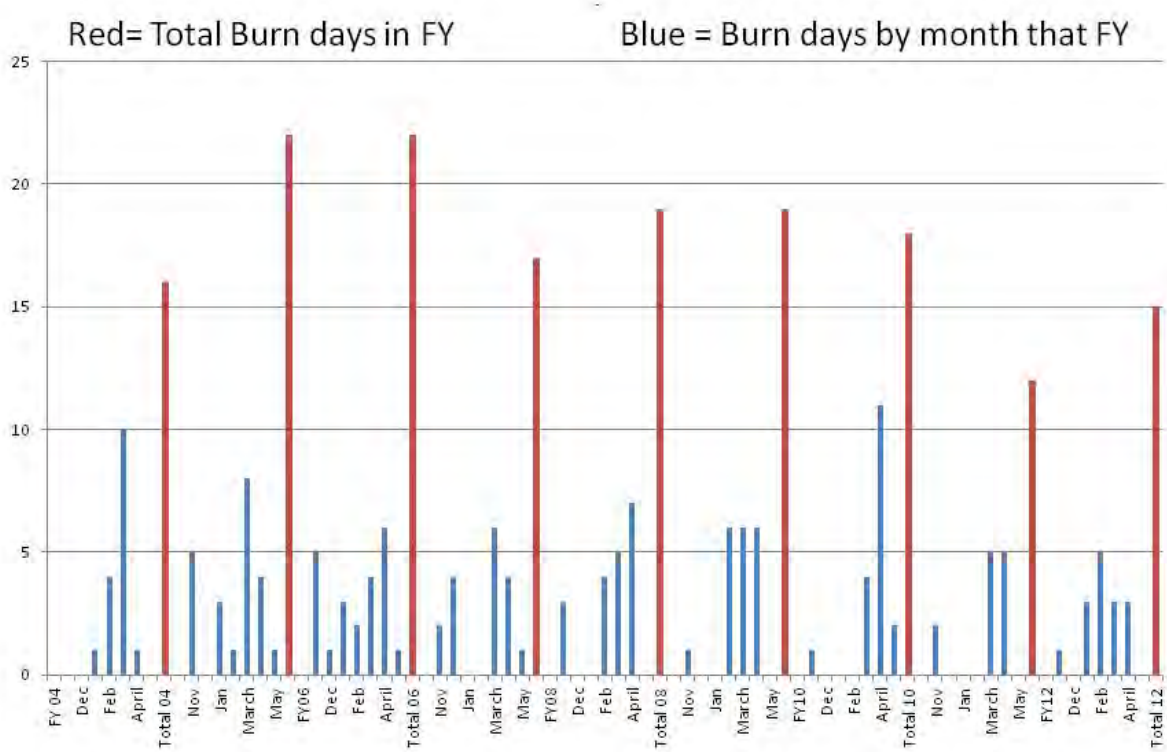
Recorded wildfire acres by year:



Prescribed burning is one method implemented to controlling wildland fuel loading and related wildfire risk. Acknowledging the trends occurring within the prescribed burn program allow managers to recognize the success and required improvements in the program. The recent decline in prescribed burn acreage accomplishment can be tied directly to the complexities involved in accessing the Range Complex for burn implementation and the recently required involvement of Fire Department personnel on prescribed burns and limitations in their availability. Prescribed burn accomplishment trends will continue to be to be tracked in relation to weather, scheduling and policy factors.

The following graphs depict the annual prescribed burn acreage accomplishment attained since FY 1998 and the total number of days available for prescribed burn activity during each FY and each month within the burn season per FY since FY 2004.


Prescribed Burning
Thousands of Acres
30
25
20
15
10
5
0
FY 98
FY 99
FY 00
FY 01
FY 02
FY 03
FY 04
FY 05
FY 06
FY 07
FY 08
FY 09
FY 10
FY 11
FY 12
Goal
Burned


Red= Total Burn days in FY
Blue = Burn days by month that FY
25
20
15
10
5
0
FY 04
Dec
Feb
April
Total 04
Nov
Jan
March
May
FY06
Dec
Feb
April
Total 06
Nov
Jan
March
May
FY08
Dec
Feb
April
Total 08
Nov
Jan
March
May
FY10
Dec
Feb
April
Total 10
Nov
Jan
March
May
FY12
Dec
Feb
April
Total 12

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APPENDIX C

WILDFIRE ECOLOGICAL CONCERNS MAP

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INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX D

UXO NO-GO ROADS MAP

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INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX E

WILDLAND FIRE NOTIFICATION LISTS

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INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX F

FORT A.P. HILL QUALIFIED WILDLAND FIRE PERSONNEL ROSTER

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX G

FEDERAL INTERAGENCY MEDICAL EXAM FORM

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Firefighter Printed Name_____

FEDERAL INTERAGENCY
MEDICAL HISTORY, EXAMINATION, and CLEARANCE FORM for Wildland Firefighters (Arduous Duty)

WHEN COMPLETED, THIS DOCUMENT CONTAINS CONFIDENTIAL MEDICAL INFORMATION AND IS SUBJECT TO THE PROVISIONS OF THE PRIVACY ACT (5 USC 552a)

GENERAL INSTRUCTIONS: A medical history and physical examination are to be conducted and this form completed every 5 years until age 45, then every three years. In those years in which a physical examination is not scheduled, the Annual Medical History and Clearance Form Wildland Firefighters (Arduous Duty) is to be completed.

SPO or FMO: a) fill-in the firefighter's name on the top left corner when this form is given/sent to the firefighter, b) on a computer generated label or typewriter, enter the Personnel Office's name, street address, city, state, zip code, telephone number, and e-mail address, c) on a computer generated label or typewriter, enter the Fire Management Officer's name, street address, city, state, zip code, telephone number, and e-mail address, d) check the appropriate box(es) on page 3 to indicate whether this is a baseline (initial)/exit exam, or a periodic exam, and e) request an appointment for the firefighter through the Central Medical Consultant's secure webpage – http://cas.chsmedical.com.

Firefighter: Prior to your appointment, please complete ALL of the **SHADED PORTIONS** of the following pages of this form, and take the entire packet directly to the PHYSICIAN/CLINIC provided to you by the Comprehensive Health Services (CHS) on the day of your scheduled examination. All "Yes" answers in the medical history sections of the form must be explained, and may require further information from your personal physician. You should arrive for your examination in a fasting condition (i.e., no food or drink other than prescribed medications during the 12 hours prior to having your blood drawn at the exam site).

Examining Physician: Please review the functional requirements and work conditions of wildland firefighters on page 2, perform a history review and physical exam, and complete all of the double-lined portions of the following form, including the indication of individual clearances beginning on page 10. NOTE: To avoid delays in processing this clearance, ALL examination findings other than "NORMAL" are to be described or explained in the spaces provided or on the back of the sheets. Individual history or examination items should NOT be considered to be "PASS/FAIL;" they should be used to contribute to your assessment of the firefighter as meeting or not meeting the specified standards. Do NOT communicate to the examinee an opinion of qualification.

PRIVACY ACT INFORMATION

The information contained in this form will be used to determine whether an individual considered for arduous level wildland firefighting can safely and efficiently perform those duties in a manner that will not unduly risk aggravation, acceleration, exaggeration, or permanently worsening a pre-existing medical condition. Its collection and use are consistent with the provisions of the 5 CFR 339 (Medical Qualification Determinations), 5 USC 552a (Privacy Act of 1974), 5 USC 3301 (Examination, Certification, and Appointment), and Executive Orders 12107 (Merit Systems Protection Board) and 12564 (Drug Free Federal Workplace). The information will be placed in your official Employee Medical File and is to be used only for official purposes as explained and published annually in the Federal Register under OPM/GOVT-10, the OPM system of records notice.

Federal Interagency Medical History, Examination, and Clearance Form for Wildland Firefighters (Arduous Duty)

Firefighter: PRINT ONLY. Complete **ALL** of the **shaded** medical history portions of this form prior to your examination appointment, and **explain** all "**Yes**" answers.

Name, address, and phone number (including fax) of physician/ health center performing examination:	**Name, address, and phone number (including fax) of Firefighter's personal physician:**	**New Applicants ONLY:** Previous experience as firefighter? **Yes** ☐ **No** ☐ Your Current Occupation: Your Current Employer: Time in Current Position (in years/months):
Firefighter's Name:	**Signature:**	**Gender: Male** ☐ **Female** ☐
Name of Employing Agency:	**Position/Job Title:**	**Date of Birth:**
Home Address: **(Street or PO Box)** **(City, State, Zip)**	**Work Phone: ( )** **Home Phone: ( )**	**SSN:** **Date of Scheduled Exam:**

Incomplete forms or missing information may result in a delay clearing you for firefighter duties and prevent you from taking the Pack Test. Submitting information that is misleading or untruthful may result in termination or failure to be cleared as a firefighter. This history form and review do not substitute for routine health care or a periodic health examination conducted by your physician. It is being conducted for occupational purposes only. I certify that all of the information I have provided on this form is complete and accurate to the best of my knowledge. I authorize release of information within this form to the Interagency Medical Standards Program Manager or their representatives for the purpose of medical clearance as an arduous duty wildland firefighter.

Firefighter's Signature:	**Current Date:**

EXAMINING PHYSICIAN (Please provide the following exam, as marked, and check off the services that have been completed)

☐ **BASELINE (INITIAL) / EXIT EXAM**	☐ **PERIODIC EXAM**
Required Services: (Check the services when completed)	Required Services: (Check the services when completed)
☐ Medical History review	☐ Medical History review
☐ Physical Examination	☐ Physical Examination
☐ Vision Screening (Corrected AND Uncorrected Near AND Far Visual Acuity; Color Vision; Peripheral Vision; Depth Perception)	☐ Vision Screening (Corrected AND Uncorrected Near AND Far Visual Acuity; Color Vision; Peripheral Vision; Depth Perception)
☐ Audiometry	☐ Audiometry
☐ Spirometry	☐ Spirometry
☐ CBC/Blood Chemistry with Lipids	☐ Electrocardiogram (One time only after 40 years of age)
☐ TB Skin Test (Mantoux)	☐ CBC/Blood Chemistry with Lipids
☐ Routine Urinalysis	☐ Routine Urinalysis
☐ Standards Review	☐ Standards review and Summary Statement

MEDICAL HISTORY

Smoking History

This information is needed since smoking increases your risk for lung cancer and several other types of cancer, chronic bronchitis, emphysema, asbestos related lung diseases, coronary heart disease, high blood pressure, and stroke. Please check your smoking status and complete the associated section:

☐ Current Smoker
Number of cigarettes per day
Number of cigars per day
Number of pipe bowls per day
Total years you have smoked

☐ Former Smoker
Number of cigarettes per day
Number of cigars per day
Number of pipe bowls per day
Total years you smoked

☐ Never Smoked

Describe Your Physical Activity or Exercise Program

Type of Activity or Exercise

Intensity: Low _____ Moderate _____ High _____
(*Examples* *Walking* *Jogging, cycling* *Sustained heavy breathing and perspiration*)

Duration, in Minutes per Session

Frequency, in Days per Week

Medications **(List all medications you are currently taking, including those prescribed and over-the-counter.)**

Date of last Tetanus (Td) shot:

Check each item "Yes" or "No". Every item checked "Yes" must be explained in the space provided or on the back of this form.

A. Have you ever been treated with an organ transplant, prosthetic device (e.g., artificial hip), or an implanted pump (e.g., for insulin) or electrical device (e.g., cardiac defibrillator)? (If Yes, please describe fully, and provide copies of pertinent medical records.) ☐ Yes ☐ No

B. Have you had, or have you been advised to have, any operation? (If Yes, please describe fully) ☐ Yes ☐ No

C. Have you ever been a patient in any type of hospital after childhood? (If Yes, please describe fully) ☐ Yes ☐ No

D. Have you consulted or been treated by clinics, physicians, healers, or other practitioners within the past year for other than minor illnesses? (If Yes, please describe fully) ☐ Yes ☐ No

E. Have you ever been rejected for military service, or discharged from service, because of physical, mental, or other reasons? (If Yes, give date and reason for rejection or discharge.) ☐ Yes ☐ No

F. Have you ever had or been treated for a mental or emotional condition? (If Yes, please describe fully) ☐ Yes ☐ No

G. Have you ever been diagnosed with or treated for alcoholism or alcohol dependence? (If Yes, please describe fully) ☐ Yes ☐ No

H. Have you ever been diagnosed as being dependent on illegal drugs, or treated for drug abuse? (If Yes, please describe fully) ☐ Yes ☐ No

I. Have you ever received, is there pending, or have you applied for a pension or compensation for a disability? (If Yes, please describe fully) ☐ Yes ☐ No

J. Do you have any allergies, such as to Poison Oak, latex, pollen, dust? (If Yes, please list and describe fully.) ☐ Yes ☐ No

Comments/Findings

MEDICAL HISTORY

VISION

	Yes	No
Any eye disease?	☐	☐
Do you wear eyeglasses?	☐	☐
Do you wear contact lenses? Hard or Soft (circle one)	☐	☐
Do you have a history of frequent headaches?	☐	☐
Blurred vision?	☐	☐
Difficulty reading?	☐	☐
Glaucoma?	☐	☐
Cataracts?	☐	☐
Color blindness?	☐	☐

DIAGNOSTIC AND PHYSICAL FINDINGS

Head and Neck

Normal	Abnormal	
☐	☐	Head, Face, Neck (thyroid), Scalp
☐	☐	Nose/Sinuses/Eustachian tube
☐	☐	Mouth/Throat
☐	☐	Pupils equal/reactive
☐	☐	Ocular Motility
☐	☐	Ophthalmoscopic Findings
☐	☐	Speech

Visual Acuity

Uncorrected vision (Snellen Units)

Both Near 20/____ Right Near 20/____ Left Near 20/____

Both Far 20/____ Right Far 20/____ Left Far 20/____

Corrected vision (Snellen Units)

Both Near 20/____ Right Near 20/____ Left Near 20/____

Both Far 20/____ Right Far 20/____ Left Far 20/____

Peripheral Vision

	Yes	No
At least 85° laterally each eye	☐	☐

If "No", comment on decreased peripherial vision in the Physician Comments/Findings section below.

Color Vision

Normal ☐ Abnormal ☐ Number Correct: _____ of _____ tested Can see Red/Green/Yellow? ☐ Yes ☐ No

Type of test

☐ Ishihara plate ☐ Function test (Yarn, wire, etc.) ☐ Other (specify_____)

Depth Perception

Type of test:_____

☐ Normal ☐ Abnormal Number Correct: _____ of _____ tested

Interpretation: _____ Seconds of Arc

Physician Comments/Findings

HEARING

	Yes	No
Any ear disease?	☐	☐
Loud, constant noise or music in the last 14 hours?	☐	☐
Loud, impact noise in past 14 hours?	☐	☐
Ringing in the ears?	☐	☐
Difficulty hearing?	☐	☐
Ear infections or cold in the last 2 weeks?	☐	☐
Dizziness or balance problems?	☐	☐
Eardrum perforation?	☐	☐
Use of a hearing aid?	☐	☐
Use of protective hearing equipment when working around loud noise?	☐	☐

If yes, type(s): ☐ foam ☐ pre-mold/plugs ☐ ear muffs

Ears

Right Normal	Right Abnormal		Left Normal	Left Abnormal	
☐	☐	TM	☐	☐	TM
☐	☐	Canal	☐	☐	Canal
☐	☐	Pinna	☐	☐	Pinna

Comments/Findings

HEARING (continued)

	Yes	No
Prior military service?	☐	☐
Prior ear surgery?	☐	☐
Recurrent ear infections?	☐	☐

Hearing

Audiogram: (Must be done ***without*** hearing aid, and must meet OSHA standard for testing [see 29 CFR 1910.95].)

Calibration Method: ☐ Oscar ☐ Biological Date

Frequency	500Hz	1000Hz	2000Hz	3000Hz	4000Hz	6000Hz	8000Hz
Right Ear							
Left Ear							

DERMATOLOGY

	Yes	No
Any skin disease?	☐	☐
Sun sensitivity?	☐	☐
History of chronic dermatitis?	☐	☐
Active skin disease?	☐	☐
Moles that have changed in size or color?	☐	☐

Skin

Normal ☐ Abnormal ☐

Comments/Findings

VASCULAR

	Yes	No
Any vascular disease?	☐	☐
Enlarged superficial veins, phlebitis, or blood clots?	☐	☐
Anemia?	☐	☐
Hardening of the arteries?	☐	☐
High Blood Pressure?	☐	☐
Stroke or Transient Ischemic Attack (TIA)?	☐	☐
Aneurysms (Dilated arteries)?	☐	☐
Poor circulation to hands and feet?	☐	☐
White fingers when cold or with vibration?	☐	☐

Vascular

Normal ☐ Abnormal ☐ Major blood vessels, including femoral pulses

☐ ☐ Peripheral blood vessels

Cardiac

Normal ☐ Abnormal ☐ EKG (baseline) - Attach printout and interpretation

☐ ☐ Heart

Vital Signs

Height_____ (inches) Weight_____ (pounds)

Blood Pressure_____/_____ mm/hg
(Measure while sitting; if elevated, repeat in 15 min.)

Pulse _____/min

Respirations_____/min

Temp(if indicated)_____ °F

HEART

	Yes	No
Any heart disease or heart murmurs?	☐	☐
Heart or chest pain (angina), with or without exertion?	☐	☐
Heart rhythm disturbance or palpitations (irregular beat)?	☐	☐
History of Heart Attack?	☐	☐
Organic heart disease (including prosthetic heart valves, mitral stenosis, heart block, heart murmur, mitral valve prolapse, pacemakers, Wolf Parkinson White (WPW) Syndrome, etc.)?	☐	☐
Heart surgery?	☐	☐
Sudden loss of consciousness?	☐	☐

Cardiac Risk Profile

Chol _____ HDL _____ LDL _____ Trig_____

Gluc _____

Comments/Findings

Coronary Risk Factors*

	Yes	No
Blood Pressure ≥ 140/90	☐	☐
Diabetes, or Fasting Glucose ≥ 126 mg/dl (Completed by CMC)	☐	☐
Total Chol. > 200 mg/dl, or HDL < 35 mg/dl (Completed by CMC)	☐	☐
Family history of CVD in males < 55	☐	☐
Age (men > 45, women > 55)	☐	☐
No regular exercise program	☐	☐
Current smoker	☐	☐

*ACSM Guidelines for Ex. Testing and Presc., 5th Ed., and National Institute of Diabetes and Digestive and Kidney Dis.

RESPIRATORY

	Yes	No
Any respiratory disease?	☐	☐
Asthma(including exercise induced asthma)?	☐	☐
Use of inhalers?	☐	☐
Bronchitis or emphysema?	☐	☐
Shortness of breath with exertion?	☐	☐
Acute or chronic lung infections?	☐	☐
Excessive, unexplained fatigue?	☐	☐
Collapsed lung?	☐	☐
Scoliosis (curved spine)?	☐	☐
History of Tuberculosis?	☐	☐
Previous positive TB skin test?	☐	☐

Date:

Pulmonary Function Testing

Calibration Date:
(should be same day as test)

Machine Brand:

Actual FVC	Actual FEV1	Actual FEV1/FVC	Actual FEF 25-75
%Predicted FVC	%Predicted FEV1	%Predicted FEV1/FVC	%Predicted FEF 25-75

Respiratory

Normal ☐ Abnormal ☐ Lungs/Chest

TB Mantoux (PPD) Date: _____

mm Induration: _____

Comments: Findings

ENDOCRINE

	Yes	No
Any endocrine disease?	☐	☐
Diabetes (insulin requiring; units per day _____)?* Year diagnosed	☐	☐
Diabetes (non-insulin requiring)?* Year diagnosed	☐	☐
Thyroid Disease?	☐	☐
Obesity?	☐	☐
Unexplained weight loss or gain?	☐	☐

*Further information should be provided from your personal physician regarding adequacy of control (e.g., HbA1c results), and any complications (e.g., retinopathy).

OBSTETRIC

	Yes	No	Male/Not Applicable
Are you pregnant?	☐	☐	☐

Comments/Findings

MUSCULOSKELETAL

	Yes	No
Any musculoskeletal disease?	☐	☐
Moderate to severe joint pain, arthritis, tendonitis?	☐	☐
Amputations?	☐	☐
Loss of use of arm, leg, fingers, or toes?	☐	☐
Loss of sensation?	☐	☐
Loss of strength?	☐	☐
Loss of coordination?	☐	☐
Chronic back pain? (back pain associated with neurological deficit or leg pain)	☐	☐

Are you RIGHT ☐ or LEFT ☐ handed (check one)?

Musculoskeletal

Normal	Abnormal	
☐	☐	Upper extremities (strength)
☐	☐	Upper extremities (range of motion)
☐	☐	Lower extremities (strength)
☐	☐	Lower extremities (range of motion)
☐	☐	Feet
☐	☐	Hands
☐	☐	Grip strength
☐	☐	Spine, other musculoskeletal
☐	☐	Flexibility of neck, back, spine, hips

Comments/Findings

NEUROLOGICAL	Yes	No
Any neurological disease?	☐	☐
Head/spine surgery?	☐	☐
Tremors, shakiness?		
Seizures (current or previous)?	☐	☐
Spinal Cord Injury?	☐	☐
Numbness or tingling?	☐	☐
History of head trauma with persistent problem?	☐	☐
Chronic recurring headaches (migraine)?	☐	☐
History of brain tumor?	☐	☐
Loss of memory?	☐	☐
Insomnia (difficulty sleeping)?	☐	☐

Neurological

Normal	Abnormal	
☐	☐	Cranial Nerves (I - XII)
☐	☐	Cerebellum
☐	☐	Motor/Sensory (include vibratory and proprioception)
☐	☐	Deep Tendon reflexes
☐	☐	Mental Status Exam

Comments/Findings

GASTROINTESTINAL	Yes	No
Any gastrointestinal disease?	☐	☐
Hernias?	☐	☐
Colostomy?	☐	☐
Persistent Stomach/Abdominal Pain?	☐	☐
Hepatitis, or other liver disease?	☐	☐
Active ulcer disease?	☐	☐
Irritable bowel syndrome?	☐	☐
Rectal bleeding?	☐	☐
Vomiting blood?	☐	☐

Gastrointestinal

Normal	Abnormal	
☐	☐	Auscultation
☐	☐	Palpation
☐	☐	Organo-megaly?
☐	☐	Tenderness?
☐	☐	Hernia?

Comments/Findings

GENITOURINARY	Yes	No
Any genitourinary disease?	☐	☐
Blood in urine?	☐	☐
Kidney Stones?	☐	☐
Difficult or painful urination?	☐	☐
Infertility (difficulty having children)?	☐	☐

Genitourinary

Normal	Abnormal	
☐	☐	Urogenital exam (Note: this clearance exam *does not* require a pelvic exam or Pap smear for females, or a rectal or prostate exam for males)

Comments/Findings

INDIVIDUAL STANDARDS, FOR EXAMINING PHYSICIAN REVIEW AND COMMENT

STANDARDS	Based upon the information available to you, does the examined firefighter appear to meet the:
PSYCHIATRIC STANDARD The applicant/incumbent must have judgement, mental functioning, and social interaction/behavior that will provide for the safe and efficient conduct of the requirements of the job. This may be demonstrated by: • No evidence by physical examination and medical history of current psychiatric conditions (including alcohol or substance dependence or abuse) likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	PSYCHIATRIC STANDARD ☐ YES ☐ NO (If "No", please fully explain)
PROSTHETICS, TRANSPLANTS, AND IMPLANTS STANDARD The presence or history of organ transplantation or use of prosthetics or implants are not of themselves disqualifying. However, the applicant/incumbent must be able to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • No evidence by physical examination and medical history that the transplant, the prosthesis, the implant, or the conditions that led to the need for these treatments are likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2). Note: For individuals with transplants, prosthetics, or implanted pumps or electrical devices, the firefighter will have to provide ***for agency review*** documentation from his/her surgeon or physician that the individual (and, if applicable, his/her prosthetic or implanted device) is considered to be fully cleared for the specified functional requirements of wildland fire fighting.	PROSTHETICS, TRANSPLANTS, AND IMPLANTS STANDARD ☐ YES ☐ NO ☐ Not Applicable (If "No", please fully explain)
IMMUNE SYSTEM/ALLERGIC DISORDERS STANDARD The applicant/incumbent must be free of communicable diseases, have a healthy immune system, and be free of significant allergic conditions in order to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A general physical exam of all major body systems that is within the range of normal variation, including: no evidence of current communicable disease that would be expected to interfere with the safe and effective performance of the requirements of the job; and no evidence of current communicable disease that would be expected to pose a threat to the health of any co-workers or the public; and • Normal complete blood count, including white blood count and differential; and • Current vaccination status for tetanus; and • No evidence by physical examination and medical history of infectious disease, immune system, or allergy conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	IMMUNE SYSTEM/ALLERGIC DISORDERS STANDARD ☐ YES ☐ NO (If "No", please fully explain)

MEDICATION STANDARD The need for and use of prescribed or over-the-counter medications are not of themselves disqualifying. However, there must be no evidence by physical examination, laboratory tests, or medical history of any impairment of body function or mental function and attention due to medications that are likely to present a safety risk or to worsen as a result of carrying out the specified functional requirements. Each of the following points should be considered: 1. Medication(s) (type and dosage requirements) 2. Potential drug side effects 3. Drug-drug interactions 4. Adverse drug reactions 5. Drug toxicity or medical complications from long-term use 6. Drug-environmental interactions 7. Drug-food interactions 8. History of patient compliance	MEDICATION STANDARD ☐ YES ☐ NO (If "No", please fully explain)
VISION STANDARD The applicant/incumbent must be able to see well enough to safely and efficiently carry out the requirements of the job. This requires binocular vision, far visual acuity, depth perception, peripheral vision, and color vision, which may be demonstrated by: • Far visual acuity uncorrected of at least 20/100 in each eye for wearers of hard contacts or spectacles; and • Far visual acuity of at least 20/40 in each eye corrected (if necessary) with contact lenses or spectacles; and • Color vision sufficient to distinguish at least red, green, and amber (yellow); and • Peripheral vision of at least 85° laterally in each eye; and • Normal depth perception; and • No ophthalmologic condition that would increase ophthalmic sensitivity to bright light, fumes, or airborne particulates, or susceptibility to sudden incapacitation. Note: Contact lenses and spectacles are acceptable for correction of visual acuity, but the user must be able to demonstrate that the corrective device(s) can be worn safely and for extended periods of time without significant maintenance, as well as being worn with any necessary personal protective equipment. Successful users of long-wear soft contact lenses are not required to meet the "uncorrected" vision guideline.	VISION STANDARD ☐ YES ☐ NO (If "No", please fully explain)
HEAD, NOSE, MOUTH, THROAT AND NECK STANDARD The applicant/incumbent must have structures and functions of the head, nose, mouth, throat, and neck that are sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A physical exam of the head, nose, mouth, throat, and neck that is within the range of normal variation, including: normal flexion, extension, and rotation of the neck; and open nasal and oral airways; and unobstructed Eustachian tubes; and no structural abnormalities that would prevent the normal use of a hard hat and protective eyewear; and • Normal conversational speech; and • No evidence by physical examination and medical history of head, nose, mouth, throat, or neck conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	HEAD, NOSE, MOUTH, THROAT AND NECK STANDARD ☐ YES ☐ NO (If "No", please fully explain)

HEARING STANDARD The applicant/incumbent must be able to hear well enough to safely and efficiently carry out the requirements of the job. This requires binaural hearing (to localize sounds) and auditory acuity, which may be demonstrated by: • A current pure tone, air conduction audiogram, using equipment and a test setting which meet the standards of the American National Standards Institute (see 29 CFR 1910.95); and • Documentation of hearing thresholds of no greater than 40 dB at 500, 1000, 2000, and 3000 Hz in each ear; and • No evidence by physical examination and medical history of ear conditions (external, middle, or internal) likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job. Note: The use of a hearing aid(s) to meet this standards is ***not*** permitted.	HEARING STANDARD ☐ YES ☐ NO (If "No", please fully explain)
DERMATOLOGY STANDARD The applicant/incumbent must have skin that is sufficient for the firefighter to safely and efficiently carry out the requirements of the function. This may be demonstrated by: • A physical exam of the skin that is within the range of normal variation; and • No evidence by physical examination and medical history of dermatologic conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	DERMATOLOGY STANDARD ☐ YES ☐ NO (If "No", please fully explain)
VASCULAR SYSTEM STANDARD The applicant/incumbent must have a vascular system that is sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A physical exam of the vasculature of the upper and lower extremities that is within the range of normal variation, including: no evidence of phlebitis or thrombosis; and no evidence of venous stasis; and no evidence of arterial insufficiency; and • No evidence by physical examination and medical history of peripheral vasculature conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	VASCULAR SYSTEM STANDARD ☐ YES ☐ NO (If "No", please fully explain)
CARDIAC STANDARD The applicant/incumbent must have a cardiovascular system that is sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A physical exam of the cardiovascular system that is within the range of normal variation, including: blood pressure of less than or equal to 140 mmHg systolic and 90 mmHg diastolic; and if taken, a normal baseline electrocardiogram (minor, asymptomatic arrhythmias may be acceptable); and no pitting edema in the lower extremities, and normal cardiac exam. • No evidence by physical examination and medical history of cardiovascular conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	CARDIAC STANDARD ☐ YES ☐ NO (If "No", please fully explain)

CHEST AND RESPIRATORY SYSTEM STANDARD The applicant/incumbent must have a respiratory system that is sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A physical exam of the respiratory system that is within the range of normal variation; and • A pulmonary function test (baseline exam) showing: forced vital capacity (FVC) of at least 70% of the predicted value; and forced expiratory volume at 1 second (FEV1) of at least 70% of the predicted value; and the ratio FEV1/FVC of at least 70% of the predicted value; and • No evidence by physical examination and medical history of respiratory conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2). Note: The requirement to use an inhaler (such as for asthma) requires agency review.	CHEST AND RESPIRATORY SYSTEM STANDARD ☐ YES ☐ NO (If "No", please fully explain)
ENDOCRINE AND METABOLIC SYSTEMS STANDARD Any excess or deficiency in hormonal production can produce metabolic disturbances affecting weight, stress adaptation, energy production, and a variety of symptoms or pathology such as elevated blood pressure, weakness, fatigue and collapse. The applicant/incumbent must have endocrine and metabolic functions that are sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A physical exam of the skin, thyroid, and eyes that is within the range of normal variation; and • Normal fasting blood sugar level; and • Normal blood chemistry results; and • No evidence by physical examination (including laboratory testing) and history of endocrine/metabolic conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	ENDOCRINE AND METABOLIC SYSTEMS STANDARD ☐ YES ☐ NO (If "No", please fully explain)
THE CONDITION OF PREGNANCY If a female applicant or incumbent raises the issue of pregnancy as the basis for a request for a special benefit, a change in duty status, or job restrictions, then justification and clarifying information for that request must be provided by the woman's obstetrician or primary care physician, along with the estimated time period the special conditions are expected to apply.	
HEMATOPOIETIC SYSTEM STANDARD The applicant/incumbent must have a hematopoietic (blood and blood-producing) system that is sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A physical exam of the skin that is within the range of normal variation; and • A complete blood count (including hemoglobin, hematocrit, platelets, and white blood count, with differential) that is within the normal range; and • No evidence by physical examination (including laboratory testing) and medical history of hematopoietic conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	HEMATOPOIETIC SYSTEM STANDARD ☐ YES ☐ NO (If "No", please fully explain)

MUSCULOSKELETAL SYSTEM STANDARD The applicant/incumbent must have a musculoskeletal system that is sufficient for the firefighter to safely and efficiently carry out the functional requirements of the job. This may be demonstrated by: • A physical exam of the upper and lower extremities, neck, and back that is within the range of normal variation for strength, flexibility, range of motion, and joint stability; and • No evidence by physical examination and medical history of musculoskeletal conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2). Note: For individuals who require the use of a prosthetic device, the firefighter will have to provide ***for agency review*** documentation from his/her surgeon or physician that the individual (and, if applicable, his/her prosthetic device) is considered to be fully cleared for the essential functions of the job.	MUSCULOSKELETAL SYSTEM STANDARD ☐ YES ☐ NO (If "No", please fully explain)
CENTRAL AND PERIPHERAL NERVOUS SYSTEM STANDARD, AND VESTIBULAR SYSTEM STANDARD The applicant/incumbent must have a nervous system that is sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A physical exam of the cranial and peripheral nerves and the vestibular and cerebellar system that is within the range of normal variation, including: intact cranial nerves, I-XII; and normal vibratory sense in the hands and feet; and normal proprioception of the major joints; and normal sensation of hot and cold in the hands and feet; and normal sense of touch in the hands and feet; and normal reflexes of the upper and lower extremities; and normal balance (e.g., heel-toe walk; Romberg; balance on one foot); and • Normal basic mental status evaluation (e.g., person, place, time, current events); and • No evidence by physical examination and medical history of nervous, cerebellar, or vestibular system conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	CENTRAL AND PERIPHERAL NERVOUS SYSTEM STANDARD, AND VESTIBULAR SYSTEM STANDARD ☐ YES ☐ NO (If "No", please fully explain)
GASTROINTESTINAL SYSTEM STANDARD The applicant/incumbent must have a gastrointestinal tract that is sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A physical exam and evaluation of the gastrointestinal tract that is within the range of normal variation; and • Normal liver function and blood chemistry laboratory tests; and • No evidence by physical examination (including laboratory testing) and medical history of gastrointestinal conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	GASTROINTESTINAL SYSTEM STANDARDS ☐ YES ☐ NO (If "No", please fully explain)
GENITOURINARY SYSTEM STANDARD The applicant/incumbent must have a genitourinary system that is sufficient for the firefighter to safely and efficiently carry out the requirements of the job. This may be demonstrated by: • A normal clean catch urinalysis; and • No evidence by physical examination and medical history of genitourinary conditions likely to present a safety risk or to worsen as a result of carrying out the essential functions of the job (see page 2).	GENITOURINARY SYSTEM STANDARDS ☐ YES ☐ NO (If "No", please fully explain)

Examining Physician's Signature:_____**Date:**_____

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX H

WORK CAPACITY TEST DOCUMENTS

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Work Capacity Test

Work Capacity Testing for Wildland Firefighters

Promoting Wildland Firefighter Safety

Wildland Firefighting and other forms of field work demand a high level of fitness to safely perform arduous, day-long work in difficult environmental conditions, including steep terrain, extreme temperatures, altitude, and smoke, and to meet unforeseen emergencies. When prolonged hard work is involved, fitness is the most important factor in work capacity.

Work capacity is a composite of fitness, acclimatization, nutrition, skill, experience, motivation, and intelligence. Fitness is the most important factor. Fitness has two components, aerobic and muscular strength.

Aerobic fitness is a measure of your ability to supply working muscles with the oxygen they need to perform vigorous day-long work. When you can deliver and use oxygen efficiently, you can do work without undue fatigue.

Muscular fitness includes strength, muscular endurance, and flexibility. Strong workers can lift and carry heavy loads with less fatigue or risk of injury. Muscular endurance enables you to continue working at otherwise fatiguing tasks. And flexibility means a better range of motion that lowers the risk of injury.

Work Capacity Tests

Some jobs, like firefighting, require passing a job-related Work Capacity Test to meet minimum qualifications. Such tests help ensure that prospective workers have the capacity to perform work without undue fatigue and without becoming a hazard to themselves or coworkers.

Most wildland firefighters must meet minimum levels of fitness requirements for the type of duties they are assigned:

Fitness Requirement	Test	Description
Arduous	Pack Test	3-mile hike with 45-pound pack in 45 min
Moderate	Field Test	2-mile hike with 25-pound pack in 30 min
Light	Walk Test	1-mile hike in 16 min no pack

Arduous work involves above average endurance (aerobic fitness), lifting more than 50 pounds (muscular fitness), and occasional demands for extraordinarily strenuous activities. All wildland firefighters perform arduous duty.

Moderate work involves lifting 25 - 50 pounds, and occasional demand for moderately strenuous activity. Safety officers and fire behavior officers perform moderate duty.

Light work involves mainly office-type work with occasional field activity.

The Pack Test

The Pack Test is a 4.83-km (3-mile) hike over level terrain carrying a 20.5kg (45 pound) pack. To qualify for arduous fireline work, you must complete the pack test in 45 minutes or less. Tests taken at altitude should be adjusted (see table).

Jogging during the test is not permitted. A score of 45 minutes correlates with a step test score of 45 or a 1.5 mile-run time of 11 minutes 40 seconds, the previous standard for wildland firefighters. The Pack Test is not a competition, it is pass/fail only.

The energy cost of the Pack Test is similar to fireline work. Pack Test performance relates directly to muscular fitness. Because of the test distance, the Pack Test is an excellent indicator of the capacity to perform prolonged arduous work under adverse conditions with a reserve to meet unforeseen emergencies.

Altitude Corrections:

Altitude (Feet)	Pack Test (Seconds)	Field Test (Seconds)	Walk Test (Seconds)
4,000 to 5,000	30	20	10
5,000 to 6,000	45	30	15
6,000 to 7,000	60	40	20
7,000 to 8,000	75	50	25
8,000 to 9,000	90	60	30

The First Step

Before you begin training or take the Work Capacity Test, all persons must fill out a Health Screening Questionnaire (HSQ). This must be done prior to conditioning for, or taking, any level of the Work Capacity Tests (WCT). The HSQ will be reviewed by a Servicing Human Resource Office prior to engaging in any of these activities. The Safety and Health Resource Office will determine whether a person is cleared to start conditioning, take a WCT, or will need further medical evaluation is needed.

People taking any of the Work Capacity Test (i.e., light duty, field test or the pack test) shall only take the test necessary for their red-carded position as described in the Wildland and Prescribed Fire Qualification System Guide (NWCG Publication PMS 310-1) and must be made available for fire assignment.

Training for the Work Capacity Test

Once you are cleared to begin training, here's what you'll need:

- Adequate footwear that will protect feet and ankles while testing.
- Comfortable clothing
- A comfortable, well-fitted pack
- A safe place to train

Start training a minimum of 4 weeks before you are scheduled to take the test. For work hardening, you may want to train in the boots you will wear on the job. Ankle-height hiking or sport shoes should be worn during the test for ankle protection.

For the Pack Test, begin by hiking a 3-mile flat course without a pack. When you can cover the course in less than 45 minutes, add a pack with about 25 pounds. Increase the weight until you can hike 3 miles in 45 minutes while carrying 45 pounds.

Also, hike hills with a pack to build leg strength and endurance. Jog the flat course without a pack to build aerobic fitness. Do overdistance training for stamina, and cross-train with mountain biking and weights to build endurance and strength.

Work Hardening

Work hardening is a gradual progression of work-specific activities designed to bring you to the job ready to deliver a good day's work. While fitness training provides the foundation for work capacity, it is no substitute for job-specific work hardening.

Prior to reporting for work applicants are strongly encouraged to train for the appropriate level work capacity test they need to take.

For more information:

Personal health, physical fitness, and work capacity all work towards making conditions safer for firefighters and the people they protect. Ask your local fire management office for more information.

See: Sharkey, Brian, Fitness and Work Capacity (NFES 1596), 1997.

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To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington D.C. 20250, or call (800) 245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

March 2002

FORT A.P. HILL - WORK CAPACITY TEST (WCT)

ADMINISTRATOR'S CHECKLIST TEST DATE:

BEFORE TEST IS INITIATED:

___ Create Job Hazard Analysis (JHA)

___ Ensure all participants have provided a Health Screening Form, Informed Consent Form, emergency contact information, and have reviewed the WCT JHA

___ Arrange for on-site Advanced Life Support (ALS) or within a 3 minute response time

___ Ensure adequate staffing of the test event based on group size. Staffing includes:

___ Test Administrator

___ Medical/1st Aid support

___ Course Monitor

___ Lap Counter

___ Timer(s)

___ Traffic control if using roads

___ Ensure course and weather conditions minimize risk of injury (optimal footing, avoid extreme weather conditions)

___ Identify any on-site participants that have emergency medical technician or, at minimum, 1st Aid/CPR training

___ Ensure participants are wearing appropriate footwear and clothing

___ Encourage participants to stretch and warm-up

___ Equipment to have on-site:

___ Luggage scale

___ Stop watch(es)

___ Radio(s)/Cell Phone(s)

___ Route markers (if needed)

___ Water or sports drinks (high heat index conditions)

___ Colored tags for participants testing at different levels

INITIATING & CONDUCTING TEST:

___ Weigh in vests pre- and post-test

___ Conduct safety briefing including medical evacuation plan
Remind participants that running will be grounds for immediate disqualification

___ Document weather conditions

___ Watch for signs of injury/distress during test

Administrator:_____

FORT A.P. HILL - WORK CAPACITY TEST

TEST DATE:

TEST LOCATION:

TEST CONDITIONS:

EMERGENCY RESPONSE PROCEDURE:

	Participant Name	Directorate/ Unit	Test Type	Laps	Final Time	Final Status
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Test types - A = Arduous, M = Moderate, L = Light

Administrator Name: Signature:

Work Capacity Test: Informed Consent

- **Pack Test- Arduous** The 3-mile test with a 45 pound pack in 45 minutes is strenuous, but no more so than the duties of wildland firefighting.
- **Field Test-Moderate** The 2-mile test with a 25 pound pack in 30 minutes is fairly strenuous, but no more so than the field duties.
- **Walk Test-Light** The 1-mile walk in 16 minutes is moderately strenuous, but no more so than the duties assig.

Risks

- There is a slight risk of injury (blisters, sore legs, sprained ankles) especially for those who have not practiced the test. If you have been inactive and have not practiced or trained for the test, you should engage in several weeks of specific training before you take the test. Be certain to warm up and stretch before taking the test, and to cool down after the test. The risk of more serious consequences (such as respiratory or heart problems) is diminished by completing the **(HSQ)** physical activity readiness questionnaire.

☐ **I have read the information on this form, the brochure "Work Capacity Test" and understand the purpose, instructions, and risks of the job related to work capacity test.**

☐ **I have read the information, understood, and truthfully answered the HSQ.**

Test to be Taken (check one) Pack test ☐ Field Test ☐ Walk Test ☐

Signature _____ Date _____

Printed Name _____

Privacy Statement

The information obtained in the completion of this form is used to help determine whether an individual being considered for wildland firefighting can carry out those duties in a manner that will not place the candidate unduly at risk due to inadequate physical fitness and health. Its collection and use are covered under Privacy Act System of Records OPM/Govt-10 and are consistent with the provisions of 5 USC 552a (Privacy Act of 1974).

Paperwork Reduction Act Statement

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0164. The time required to complete this information collection is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (800) 975-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

WCT Level
__ Arduous
__Moderate
__Light

HEALTH SCREENING QUESTIONNAIRE (HSQ)

Assess your health needs by marking all true statements.

The purpose is to identify individuals who may be at risk in taking the Work Capacity Test (WCT) and recommend an exercise program and/or medical examination prior to taking the WCT.

Employees are required to answer the following questions. The questions were designed, in consultation with occupational health physicians, to identify individuals who may be at risk when taking a WCT. The HSQ is not a medical examination. Any medical concerns you have that place you or your health at risk should be reviewed with your personal physician prior to participating in the WCT.

Check 'Yes' or 'No' in response to the following questions:

[ ] Y [ ] N 1) During the past 12 months have you at any time (during physical activity or while resting) experienced pain, discomfort or pressure in your chest.

[ ] Y [ ] N 2) During the past 12 months have you experienced difficulty breathing or shortness of breath, dizziness, fainting, or blackout?

[ ] Y [ ] N 3) Do you have a blood pressure with systolic (top #) greater than 140 or diastolic (bottom #) greater than 90?

[ ] Y [ ] N 4) Have you ever been diagnosed or treated for any heart disease, heart murmur, chest pain (angina), palpitations (irregular beat), or heart attack?

[ ] Y [ ] N 5) Have you ever had heart surgery, angioplasty, or a pace maker, valve replacement, or heart transplant?

[ ] Y [ ] N 6) Do you have a resting pulse greater than 100 beats per minute?

[ ] Y [ ] N 7) Do you have any arthritis, back trouble, hip /knee/joint /pain, or any other bone or joint condition that could be aggravated or made worse by the Work Capacity Test?

[ ] Y [ ] N 8) Do you have personal experience or doctor's advice of any other medical or physical reason that would prohibit you from taking the Work Capacity Test?

[ ] Y [ ] N 9) Has your personal physician recommended against taking the Work Capacity Test because of asthma, diabetes, epilepsy or elevated cholesterol or a hernia?

Regardless whether you are taking the Work Capacity test at the Arduous, Moderate or Light duty level, a "Yes" answer requires a determination from your personal physician stating that you are able to participate.

I understand that if I need to be evaluated by a physician, it will be based on the fitness requirements of the position(s) for which I am qualified.

Signature:_____ Printed Name _____Date _____

Unit: _____ City _____State _____

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U.S. Department of the Army	1. WORK PROJECT/ACTIVITY WORK CAPCITY TEST	2. LOCATION FORT A.P. HILL, VA	3. UNIT DPW, DES, DPTMS
JOB HAZARD ANALYSIS (JHA)	4. NAME OF ANALYST ANNE ULREY, CTR	5. JOB TITLE ASST FOREST MANAGER	6. DATE PREPARED 23 JANUARY 2012

7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Mitigations * Administrative Controls * PPE
Firefighter Work Capacity Pre-Test NOTE: Each District, Forest and Region may have additional requirements/guidelines for local conditions. EVERY WCT ADMINISTRATOR SHOULD CONDUCT A THOROUGH PRE-WCT JHA!	Test Administration & Site Preparation	Review that all candidates have completed all necessary medical documentation appropriate for their WCT level prior to testing. Ensure at a minimum, an EMT with equipment (e.g., AED, airways, BSI, and oxygen) is on site for the duration of the testing. Consider the proximity to medical care in making this decision. Having local fire department/EMS personnel on stand-by may be appropriate. Test administrator should ensure a means of communication exists (cell phone, radio, etc) Be aware of the local weather forecast. Ensure inclement weather doesn't adversely impact WCT. Ensure all candidates and WCT assistants are dressed appropriately for expected weather conditions. Ensure the course is: flat, free of tripping/slipping hazards, well marked (and well lit, if in darkness/24 hour day zone). Preferably, select a course route without motor vehicle conflicts. If necessary, arrange for traffic control to eliminate or abate recognized traffic hazards (e.g., road guards). Have sufficient fluids on hand to hydrate personnel participating in the WCT before, during and after the test. Refrain from caffeinated/"energy" drinks.
	Post Test	Remove all course markings (e.g., flagging, cones, road closure signs) and any refuse generated by the WCT
Firefighter Work Capacity Testing Walking on flat surface in measured distances of: 1 Mile ("Light or Walk" @ no lbs) 2 Miles ("Moderate or Field" @ 25 lbs)	Physical Exertion	Warm-up and stretch muscles before starting the test. Begin physical exercise with a slow warm-up and gradually increase intensity. This may take up to 30 minutes or more depending upon local conditions. Monitors along course shall provide fluids. Immediately notify the WCT Administrator, Course Monitor, Timer or

3 Miles (“Arduous or Pack” @ 45 lbs)		EMT, if ill or injured. Advise your Supervisor, if the test cannot be completed by an individual, for whatever reason, see WCT Administrator. Cool down properly and stretch after the test. Replenish fluids.
	Walking	Do not exceed a walking pace. If subject doesn’t satisfactorily complete the test for any reason, consult with the WCT Administrator for further direction.
Firefighter Work Capacity Testing	Heart Attack	Signs and symptoms include: • Chest discomfort. Most heart attacks involve discomfort in the center of the chest that lasts more than a few minutes, or that goes away and comes back. It can feel like uncomfortable pressure, squeezing, fullness or pain. • Discomfort in other areas of the upper body. Symptoms can include pain or discomfort in one or both arms, the back, neck, jaw or stomach. • Shortness of breath with or without chest discomfort. • Other signs may include breaking out in a cold sweat, nausea or lightheadedness and pain in other areas of the body even. • Sudden loss of responsiveness (no response to tapping on shoulders). • Absent of normal breathing (the victim does not take a normal breath when you tilt the head up and check for at least five seconds). Emergency Treatment includes: • Activate the EMS system (Call 911 – even if EMT present). • Cease physical exertion. Place in shaded, cool area. Have patient lay down. • Provide oxygen, if available (at high flow) • Remove/loosen restrictive clothing. • Elevate lower extremities (legs) 12’-18”
Firefighter Work Capacity Testing	Knee and Back Pain	Use proper lifting technique or a partner when putting on or taking off the pack. Have pack/vest adjusted to fit before starting the test. If while taking the test the pack/vest moves or is not sitting right, STOP, (you have plenty of time) make the adjustments and then continue on with the test. Contact site medical personnel and your supervisor.

Firefighter Work Capacity Testing	Over-exertion	Stop the test if feeling faint, dizzy, or nauseated. Call for assistance. Stay hydrated, keep a proper diet, and get plenty of rest. Mitigate with good pre test physical preparation Contact site medical personnel and your supervisor.
Firefighter Work Capacity Testing	Muscle Cramps	If possible, plan to take the test at a time of day when temperatures are less likely to cause heat related issues such as muscle cramps, usually in the morning. Cool down when the test is completed. Contact site medical personnel and supervisor.
Firefighter Work Capacity Testing	Blisters	Properly fitted pack/vest and footwear should be used. If while taking the WCT the pack/vest or footwear becomes uncomfortable, STOP, make the adjustments and then continue on with the test. If pain is too great to continue, seek medical attention. Advise WCT Administrator and your Supervisor. Properly fitted socks/footwear. Double layer or “dry wick” socks, powder, or moleskin as needed. Treat “hot-spots” as soon as detected to prevent blisters from forming. Consult with the site medical personnel and notify your Supervisor.
Firefighter Work Capacity Testing	Shin Splints/Bone Bruises	Insure footwear is properly fitted, broken in and provides adequate protection and support. Walk on smooth, level surfaces when possible. Contact site medical personnel and your Supervisor.
Firefighter Work Capacity Testing	Strains and Sprains	Time intervals at posted distances will be given for subjects to adjust walking pace, if needed. Wear comfortable footwear and socks that provide adequate support and protection to the feet and ankles. Do not exceed a walking pace. Do not run or jog with the weighted pack/vest. Be careful lifting and removing the weighted pack/vest. Contact site medical personnel and your Supervisor.

Firefighter Work Capacity Testing	Heat Related Illness:	Heat stress occurs when the body's core temperature rises beyond safe limits. Evaporation of sweat is the body's main defense against heat. When fluids are not replaced, the body can no longer regulate its' temperature. Have an adequate supply of water available and that persons are drinking enough water (approximately 1 liter per hour).
	1) Heat Exhaustion	Signs and symptoms of heat exhaustion include: fatigue, weakness and collapse. The skin becomes pale, cold, and clammy associated nausea, vomiting, dizziness, headache, problems breathing, and diarrhea. Treatment includes: 1. Place the victim in a cool, shady place, lying down with feet raised 8-12 inches above the head. 2. Loosen clothing and apply cool compresses/wet cloths to skin. 3. Transport the victim to a hospital for care as soon as possible. ----------
	2) Heat Stroke	Heat stroke is a true medical emergency. Symptoms include: confusion, high body temperature (up to 106F), hot (red) and often dry skin, rapid pulse, convulsions, loss of consciousness, and coma. Death is possible without prompt treatment. Lack of sweating is one possible sign of imminent heatstroke. Do not delay treatment, it must be immediate! Emergency treatment includes: 1. Cool the body quickly with cool compresses and cool, wet cloths. Place ice packs in arm pits and groin area, if available. 2. Move the victim into a cool, shady area. If possible move person into an air conditioned vehicle or fan subject. Prevent further exposure to heat. 3. If conscious, administer small sips of cool fluids. 4. Transport the victim to a medical facility as quickly as possible. 5. Activate the EMS system (Call 911)
Firefighter Work Capacity Testing	General Course Conditions (e.g., rocks, logs, gravel, potholes, ice, snow or mud, and hard pack surfaces)	Locate and mark a suitable test course route with a walking surface free of recognized hazards. All participants should wear properly fitting and broken-in footwear and socks. Anyone taking the WCT should wear a properly fitted backpack/vest

Firefighter Work Capacity Testing	Weather Traffic	and, shall be worn with proper weight for the test fitness level. Watch footing on all course surfaces. Postpone testing until a suitable safe route/time can be designated. Select a course route without motor vehicle conflicts. Consider temporary closures. If necessary, arrange for traffic control to eliminate or abate recognized traffic hazards.

10. LINE OFFICER SIGNATURE	11. TITLE	12. DATE

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX I

FORT A.P. HILL FUEL LOADING VISUAL GUIDE EXCERPT

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A Visual Guide to Forest Fuels and Fire Hazard on Fort A.P. Hill

Jason R Applegate
Coordinator, Range & Training
Land Assessments
Environmental Division
Directorate of Public Works
Fort A.P. Hill, Virginia

June 2006

Fire Hazard Ratings

The fire hazard ratings for installation forests were developed in cooperation with Larry Capelle and Anne Ulrey of the Forestry branch, Environmental Division, Directorate of Public Works, Fort A.P. Hill. These ratings assume worst case fire weather conditions (i.e. drought, high winds etc..).

Data on forest fuels and forest vegetation structure in this assessment is consistent with forest attributes used in national models to predict wildland fire behavior (Andrews and Bradshaw 1997). Low, moderate, and high hazard thresholds were developed for the various types of forest fuels and vegetation conditions based on an initial rating of plot photographs (intuitive understanding), followed by a statistical analysis of sample data (quantitative understanding). Hazard thresholds were color-coded red (high), amber (moderate) or green (low) for ease of understanding. The thresholds are as follows:

Forest fuel	Fire Hazard		
	Low	Moderate	High
Coarse woody debris (tons/acre)	< 14	14 - 30	> 30
Fine woody debris (tons/acre)	< 6	6 - 8	> 8
Leaf litter cover (%)	<50	50-80	>80
Snag proportion (% of overstory)	<8	8-12	>12
Understory density (stems/acre)	<200	200 - 500	> 500

iv

Hazard Rating

4.5

Data summary

Forest covertype: Pine

Forest structure: Small sawtimber

Down & dead woody fuels:

	Diameter class (in.)	Tons/acre)
FWD	0.1 – 0.24	0.06
	0.25 – 0.9	0.7
	1.0 – 2.9	0.9
	Total FWD:	1.6
CWD	≥ 3.0	
	Total CWD:	0.0

Other fuels data:

Leaf litter

Litter cover (%): 65

Litter depth (in.): 1.5

Snags

Snag proportion (%): 0

Understory

Saplings/acre: -

Shrubs/acre: -

Total stems/acre: 0

2

FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX J

RANGE CONTROL RISK DECISION MATRIX AND COMPOSITE RISK MANAGEMENT FORM

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX K

INCIDENT COMMAND SYSTEM FOR FORT A.P. HILL

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX L

FORT A.P. HILL SIGNAL OPERATION INSTRUCTION

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX M

FORT A.P. HILL FIREBREAK STATUS MAP

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX N

MUTUAL AID AGREEMENT(S)

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX O

10 FIRE ORDERS AND 18 WATCH OUT SITUATIONS

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FIRE ORDERS

Fight fire aggressively but provide for safety first.
Initiate all action based on current and expected fire behavior.
Recognize current weather conditions and obtain forecasts.
Ensure instructions are given and understood.

Obtain current information on fire status.
Remain in communication with crew members, your supervisor and adjoining forces.
Determine safety zones and escape routes.
Establish lookouts in potentially hazardous situations.
Retain control at all times.
Stay alert, keep calm, think clearly, act decisively.

WATCH OUT SITUATIONS

Fire not scouted and sized up.
In country not seen by daylight.
Safety zones and escape routes not identified.
Unfamiliar with weather and local factors influencing fire behavior.
Uninformed on strategy, tactics, and hazards.
Instructions and assignments not clear.
No communication link with crew members/supervisor.
Constructing fireline without safe anchor point.
Building fireline downhill with fire below.
Attempting frontal attack on the fire.
Unburned fuel between you and the fire.
Cannot see main fire, not in contact with anyone who can.
On a hillside where rolling material can ignite fuel below.
Weather is getting hotter and drier.
Wind increases and/or changes direction.
Getting frequent spot fires across line.
Terrain and fuels make escape to safety zones difficult.
Taking a nap near the fireline.

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX P

PRESCRIBED BURN PLAN AND RESULTS MAPS BY FISCAL YEAR

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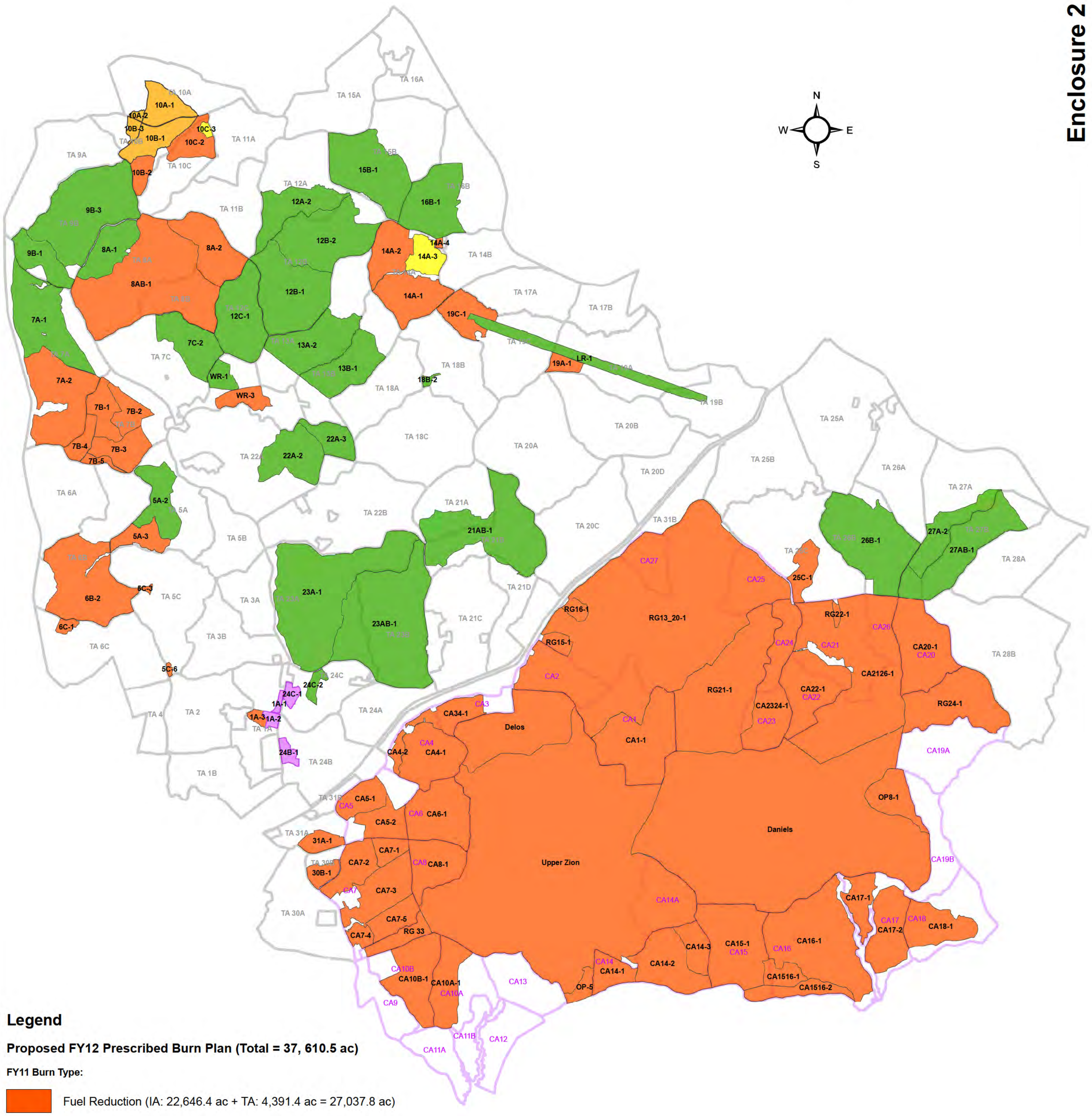
FY12 Prescribed Burn Plan

Enclosure 2



Legend

Proposed FY12 Prescribed Burn Plan (Total = 37, 610.5 ac)

FY11 Burn Type:

- Fuel Reduction (IA: 22,646.4 ac + TA: 4,391.4 ac = 27,037.8 ac)
- Vegetation Control (9,992.5 ac)
- Site Preparation (350.4 ac)
- Oak Regeneration (131.0 ac)
- Wildlife (98.8 ac)
- CA 1 — controlled_access_area_edits_20110808
- TA 1 — sub_training_area_edit_20110106

Sept. 2011
DPW - ED - Forestry

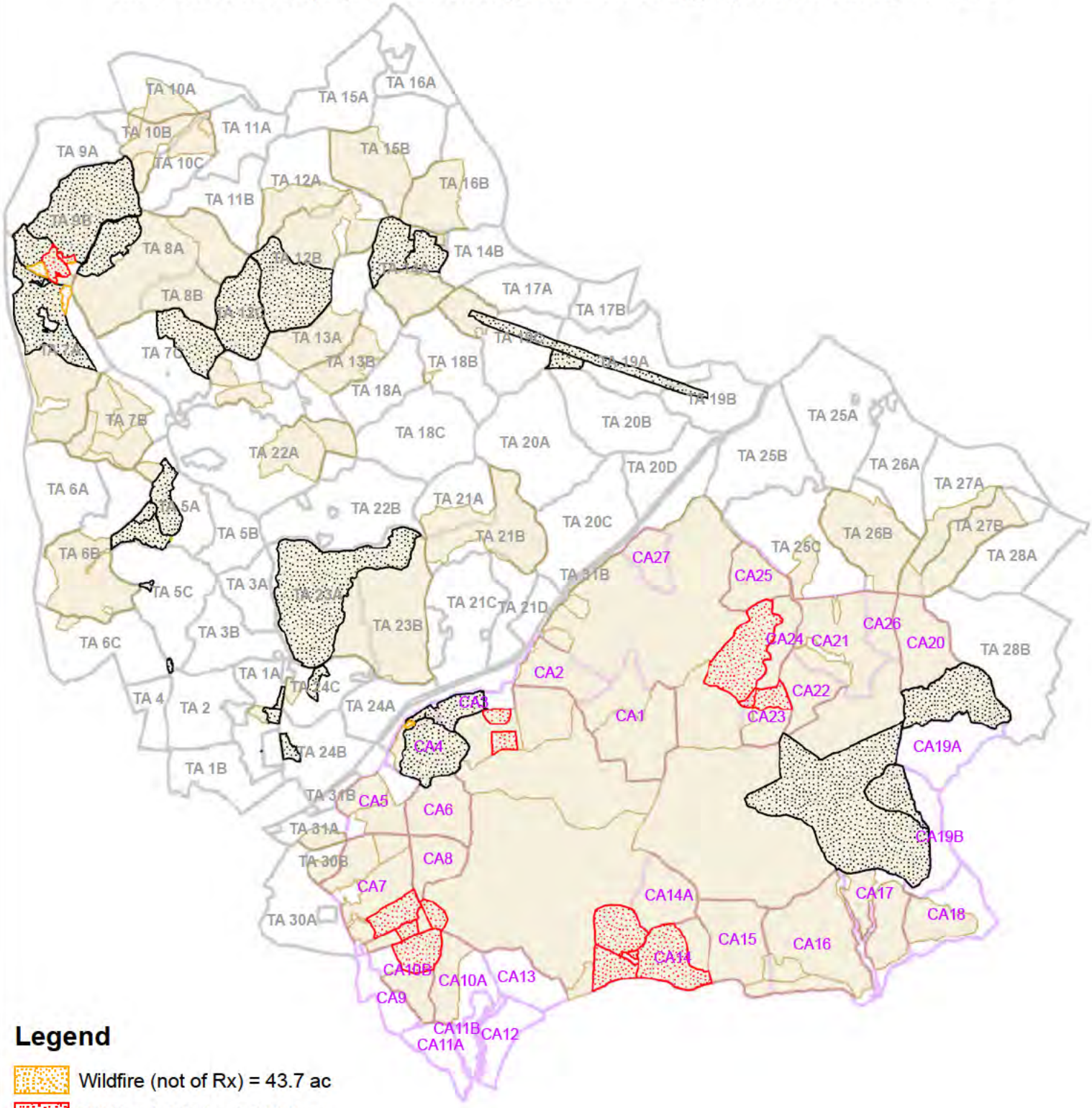
0 1 2 4 6 8 10 Kilometers

FY12 Burn Results

6 Apr 2012

DPW - ENRD - Forestry Branch

Y:\Conservation\Forestry\Mgmt\Fire\Prescribed_Burn\FY12\GIS\Map_Projects\FY12RxBurn_Results.mxd



Legend

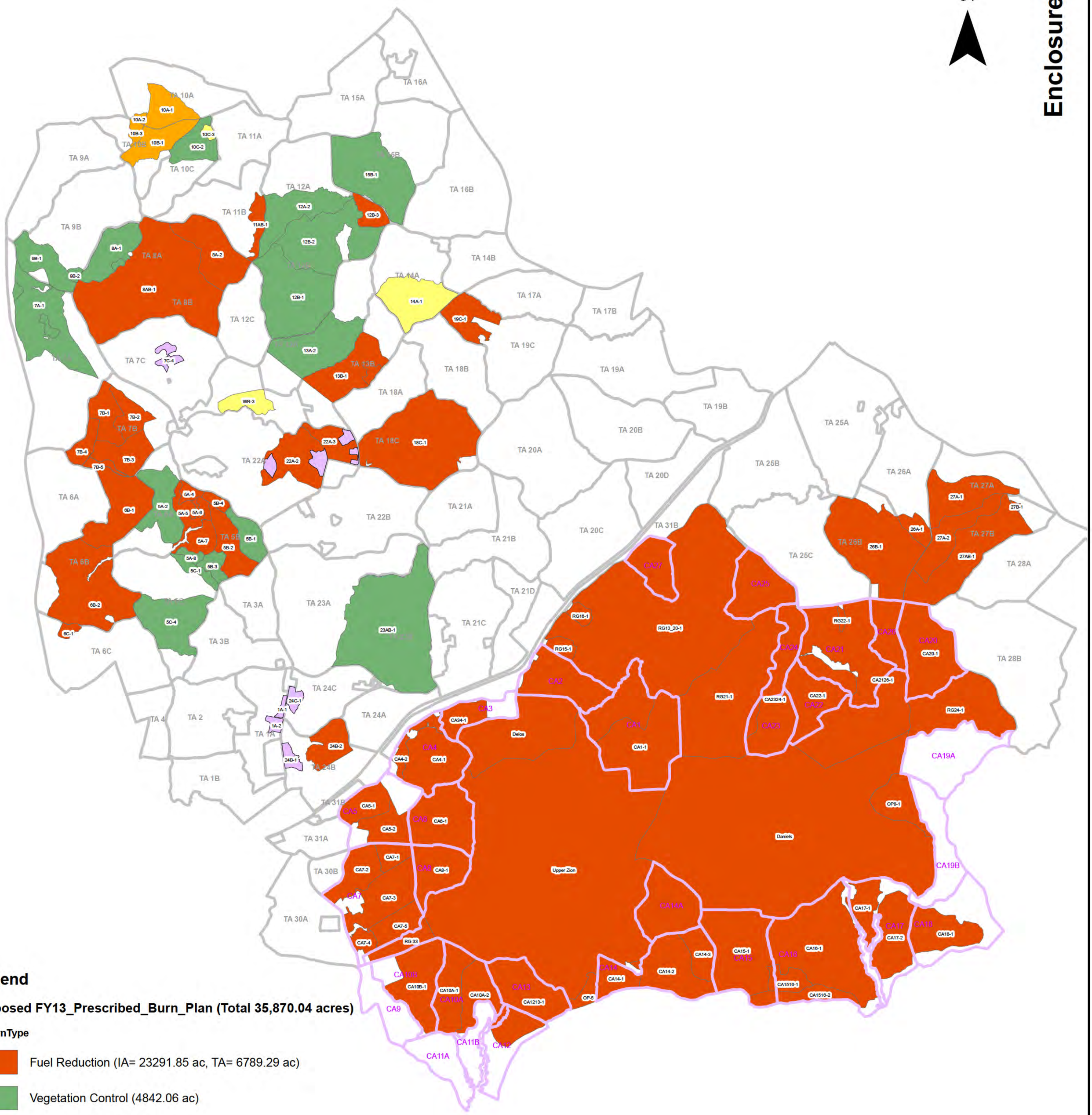
- Wildfire (not of Rx) = 43.7 ac
- Wildfire (of Rx) = 1,720.0 ac
- Rx burn = 7,282.6 ac
- FY12 Rx Burn Plan = 37,610.5 ac (9,002.6 ac burned of plan - 9,046.3 ac total burned)
- controlled_access_area_edits_20110808
- sub_training_area_edit_20110106

0 2.5 5 10 Kilometers

N W E S

FY13 Prescribed Burn Plan

Enclosure 2



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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX Q

PRESCRIBED BURN DOCUMENTS

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Fort A.P. Hill Forestry Daily Prescribed Burn Plan

Date: _____

1. Location and Identification

Block Information

Block Number: _____

TA/CAA/IA/Range: _____

Location: _____

Acres: _____ **Map Attached:** **YES** **NO** **(circle one)**

2. Goal and Objective of Burn

Reason for Burn:

_____ **Site Preparation**

_____ **Fuel Reduction**

_____ **Wildlife Habitat**

_____ **Vegetation Control**

Other: _____

Objectives of Burn:

3. Weather

Prescription Conditions

Surface Wind: _____ **Direction** _____ **MPH** **Mixing Height:** _____

Transport Wind: _____ **Direction** **Relative Humidity %:** _____

Temperature: _____

Preferred Fire Spread Index: _____

Preferred Fire Intensity:

_____ **High**

_____ **Medium**

_____ **Low**

Preferred Time of Day for Burn:

_____ **Normal working**

_____ **Evening**

Preferred Time of Year for Burn:

_____ **Spring** _____ **Fall**

_____ **Summer** _____ **Winter**

Fort A.P. Hill Forestry Daily Prescribed Burn Plan

Weather for Day of Burn

	Forecast (1300 hrs)				Actual On Site			
	Day		Night		Prior		At Conclusion	
Surface Wind	Direction	MPH	Direction	MPH	Direction	MPH	Direction	MPH
Transport Wind	Direction	MPH						
Mixing Height								
Relative Humidity %								
Temperature								
Fire Spread Index								

4. Other Considerations

Notification Prior to Start of Burn
(See Attached Call List)

Fort A.P Hill Garrision Commander
Fort A.P. Hill DES - Fire Department
Fort A.P. Hill DES - Police
Fort A.P. Hill Directorate of Plans, Training, Mobilization , and Security
- **Range Control**

Fort A.P. Hill Directorate of Public Works
- **Environmental and Natural Resources Division**

Fort A.P. Hill Safety Office
Fort A.P. Hill Public Affairs Office
Virginia Department of Forestry
- **Caroline, King George, Spotsylvania County Offices**

Virginia Department of Environmental Quality
Regional County Dispatch Offices
- **Caroline County**
- **Spotsylvania County**
- **King George County**

Regional Town Mayors
- **Bowling Green**
- **Port Royal**

Risk Assessment **(See Attached)**

Fort A.P. Hill Forestry Daily Prescribed Burn Plan

What are the fuel conditions and characteristics?

5. Burn Strategy

Equipment On Site

	Recommended	Actual
Number of tractor / fire plow units	_____	_____
Number of pick-ups or other vehicles	_____	_____
Additional water supply (fire engine)	_____	_____
Number of brush trucks	_____	_____
Number of hand radios	_____	_____

Other, specify:

Personnel On Site

	Recommended	Actual
Number of Personnel	_____	_____

Other, specify:

Ignition Pattern (starting point shown on map)

Ignition Method

_____ Drip Torch
_____ ATV
_____ Aerial
Other _____

Fort A.P. Hill Forestry Daily Prescribed Burn Plan

Site-Specificy Contingency Plan

Planned Mop-up Procedures

Special Fire Control or Resource Considerations

Known UXO Hazards? _____ **Y** _____ **N**

6. Smoke Management Plan

Are the mixing height and transport winds within prescribed limits? **Yes** **No** (Circle One)

What is the forecasted evening dispersion?

_____ **Stagnant** _____ **Fair**
_____ **Very Poor** _____ **Good**
_____ **Poor**

Is smoke expected to cross frequently traveled roads? **Yes** **No** (Circle One)

If "Yes", post smoke warning signs or designate road guards to alert travelers.

If smoke is expected to impact state roads, make a recommendation to the appropriate county dispatch office to notify the Virginia Department of Transportation.

Other smoke management considerations:

7. Prepared By

Printed Name _____

Signature _____

Date _____

Phone Number _____

VA Certified Prescribed Burn Manager Number _____

FORT A.P. HILL PRESCRIBED FIRE
GO/NO-GO CHECKLIST

Yes	No	Questions
		Are ALL weather factors within prescription?
		Are ALL smoke management specifications met?
		Are ALL planned operations personnel and equipment on-site and operational?
		Do ALL personnel have appropriate PPE?
		Has the availability of ALL contingency resources been check, and are they available?
		Have ALL required notifications been made?
		Are ALL firebreaks completed?
		Has the Fire Department checked the firebreaks?
		Has the Fire Department approved the Hot-work Permit?
		Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?
		In your opinion, can the burn be carried out according to the prescribed fire plan and will it meet the planned objectives(s)?

If all questions were answered "YES" proceed with prescribed fire implementation.

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Block ID	TA1A, 1B, 23D	24B, 24D, 24E, 24F	CA4A
Ignition Pattern	lighting backing fires first, head fires last	see previous	see previous
Hazards	uneven surfaces	uneven surfaces	ticks
Resources to Protect	bird boxes	utility poles	plastic culvert
Fuel Type	Mostly Grassy Field	Mostly Grassy Fields	Mostly Forested

Block ID	TA1A, 1B, 23D	24B, 24D, 24E, 24F	CA4A
Ignition Pattern	lighting backing fires first, head fires last	see previous	see previous
Hazards	uneven surfaces	uneven surfaces	ticks
Protect	bird boxes	utility poles	plastic culvert
Fuel	Mostly Grassy Field	Mostly Grassy Fields	Mostly Forested

Block ID	TA1A, 1B, 23D	24B, 24D, 24E, 24F	CA4A
Ignition Pattern	lighting backing fires first, head fires last	see previous	see previous
Hazards	uneven surfaces	uneven surfaces	ticks
Resources to Protect	bird boxes	utility poles	plastic culvert
Fuel Type	Mostly Grassy Field	Mostly Grassy Fields	Mostly Forested

Block ID	TA1A, 1B, 23D	24B, 24D, 24E, 24F	CA4A
Ignition Pattern	lighting backing fires first, head fires last	see previous	see previous
Hazards	uneven surfaces	uneven surfaces	ticks
Protect	bird boxes	utility poles	plastic culvert
Fuel	Mostly Grassy Field	Mostly Grassy Fields	Mostly Forested

Block ID	TA1A, 1B, 23D	24B, 24D, 24E, 24F	CA4A
Ignition Pattern	lighting backing fires first, head fires last	see previous	see previous
Hazards	uneven surfaces	uneven surfaces	ticks
Resources to Protect	bird boxes	utility poles	plastic culvert
Fuel Type	Mostly Grassy Field	Mostly Grassy Fields	Mostly Forested

Block ID	TA1A, 1B, 23D	24B, 24D, 24E, 24F	CA4A
Ignition Pattern	lighting backing fires first, head fires last	see previous	see previous
Hazards	uneven surfaces	uneven surfaces	ticks
Protect	bird boxes	utility poles	plastic culvert
Fuel	Mostly Grassy Field	Mostly Grassy Fields	Mostly Forested

HOT-WORK PERMIT

For use of this form, see AR 420-1; the proponent agency is ACSIM.

1. LOCATION	2. DATE	3. PERMIT NO.
4. TYPE OF WORK	5. START TIME	6. FINISH TIME
7.a. NAME OF PERSON RESPONSIBLE FOR HOT-WORK AT JOB SITE *(Contractor/Government Employee)*	7.b. SIGNATURE	

PRECAUTIONS BEFORE OPERATIONS

CHECKLIST	CHECK ONE	
	YES	NO
8. Did Fire Department Inspector inspect site?	☐	☐
9. Are there procedures for Fire Department emergency notification? *(Emergency No.)*	☐	☐
10. Are combustibles in area noted?	☐	☐
11. Should combustibles be covered? *(If yes, note in remarks)*	☐	☐
12. Are proper extinguishers on hand?	☐	☐
13. Is wet-down necessary? *(If yes, note in remarks)*	☐	☐
14. Is smoking permissible at work sites?	☐	☐
15. Is continuous fire watch required?	☐	☐
16. Is Fire Department standby required?	☐	☐
17. Are other precautions required? *(If yes, note in remarks)*	☐	☐
18.a. FIRE DEPARTMENT INSPECTOR'S SIGNATURE	18.b. DATE	

PRECAUTIONS AFTER OPERATIONS

CHECKLIST	CHECK ONE	
	YES	NO
19.a. Was Fire Department notified after hot-work operation was completed?	☐	☐
19.b. Time:		
20.a. Did Fire Department inspector inspect work site?	☐	☐
20.b. Time:		
21. Are after work conditions safe? *(If no, note in remarks)*	☐	☐
22. Are heat producing devices safe if left at work site?	☐	☐
23.a. FIRE DEPARTMENT INSPECTOR'S SIGNATURE	23.b. DATE	

24. REMARKS

NOTE: PERMIT VALID ON DAY OF OPERATION AT ONE LOCATION ONLY

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX R

INTEGRATED WILDLAND FIRE MANAGEMENT PLAN DISTRIBUTION LIST

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Integrated Wildland Fire Management Plan Distribution List:

Fort A.P. Hill Command Group	3 copies
Directorate of Emergency Services	
Director	1 copy
Police Chief	1 copy
Fire Chief	4 copies
Directorate of Plans, Training, Mobilization and Security	
Director	1 copy
Range Control	2 copies
Emergency Operations Center	2 copies
Directorate of Public Works	
Director	1 copy
Environmental and Natural Resources Division	1 copy
Forestry Branch	1 copy
Operations & Maintenance Division	1 copy
Roads & Grounds	1 copy
Directorate of Logistics	
Director	1 copy
Safety Office	1 copy
Public Affairs Office	1 copy

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FORT A.P. HILL
INTEGRATED WILDLAND FIRE MANAGEMENT PLAN

APPENDIX S

INTEGRATED WILDLAND FIRE MANAGEMENT PLAN ANNUAL UPDATE REQUIREMENTS

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The IWFMP is to be reviewed and updated annually with a major revision to occur in five years (2016). Multiple plan proponents will need to be evaluated each year for applicability, currentness, and to meet safety requirements. The following list identifies the components of the plan that require annual review and update, those that require periodic update, who needs to involved in the review process, and a record of which years reviews and updates occurred. Any changes that occur from this review and update process will be communicated to all stakeholders identified in Appendix R.

Plan Component/Location	**Location in Plan**	**Review/Update Frequency**	**Proponent**	**Year(s) Reviewed/Updated**
Range Complex Fire Risk Zones Map	Figure 1-4	As needed per risk assessment results	DPTMS	
Wildfire Response and Suppression Procedures	Section 2.0	As Procedural Changes Occur	Wildfire Program Manager	
Prescribed Burn Implementation Procedures	Section 3.0	As Procedural Changes Occur	Prescribed Burn Program Manager	
Wildland Fire History Analysis	Appendix B	Annual	Forestry Branch	
Ecological Concerns Map	Appendix C	Annual	ENRD	
UXO No-Go Roads	Appendix D	Annual	DPTMS	
Wildland Fire Notification List	Appendix E	Annual	ENRD/DES/ DPTMS/PAO	
Fort A.P. Hill Qualified Personnel Roster	Appendix F	Annual	Installation Safety Office	
Range Control Training Decision Matrix and Composite Risk Management Form	Appendix J	As Decision Process Changes Occur	DPTMS	
Incident Command System for Fort A.P. Hill	Appendix K	Annual	DES/DPW/ DPTMS	
Fort A.P. Hill Signal Operating Instruction	Appendix L	Annual	DPTMS	
Fort A.P. Hill Firebreak Status Map	Appendix M	Annual	DPW	
Mutual Aid Agreements	Appendix N	Annual	DES	
Annual Prescribed Burn Results Map	Appendix P	Annual	Forestry Branch	
Prescribed Burn Documents	Appendix Q	Annual	Forestry Branch	

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APPENDIX F – FORT A.P. HILL
5-YEAR PROPOSED FORESTRY ACTIVITIES

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Figure F-1. Fort A.P. Hill Forest Management 5-Year Plan Timber Harvests

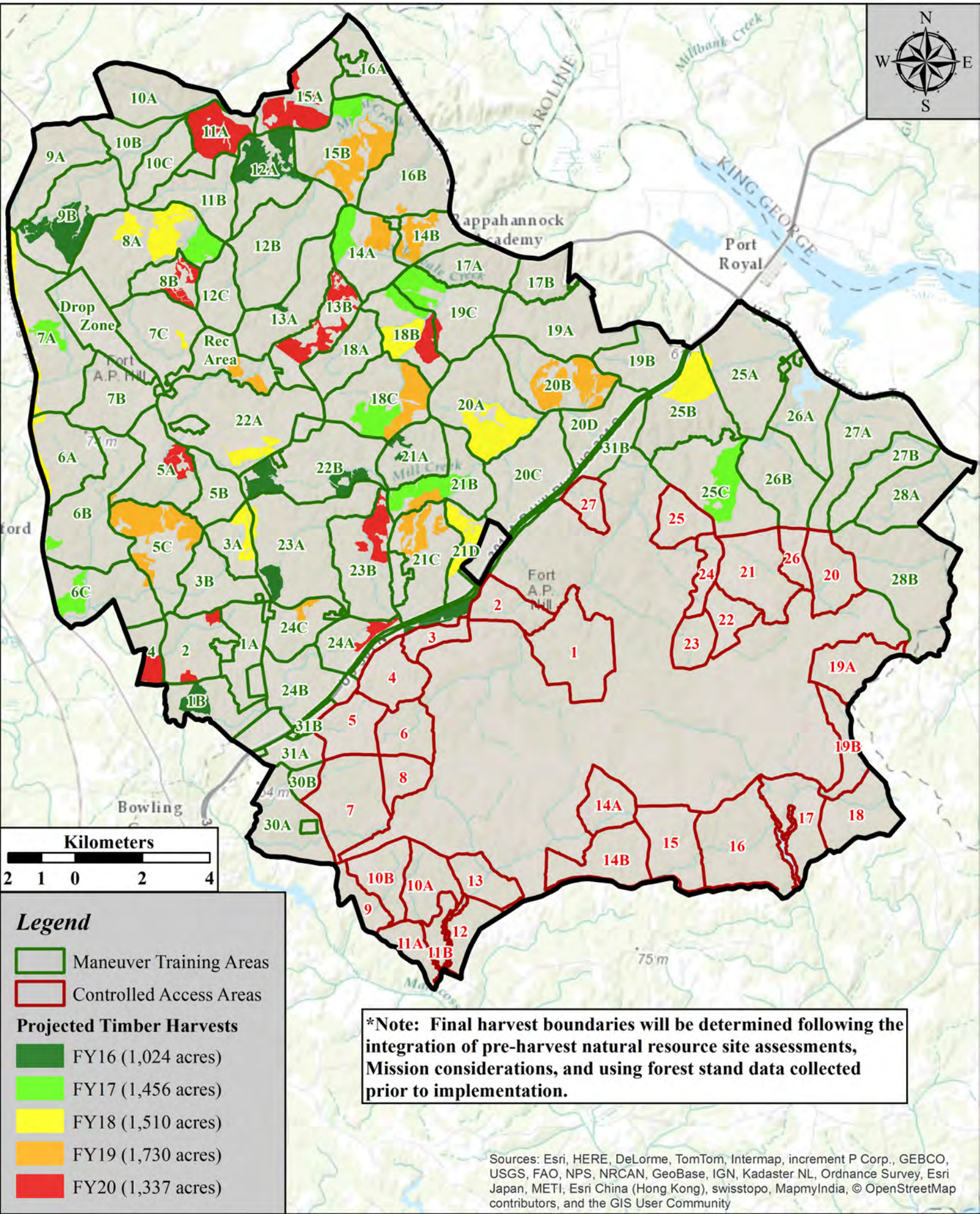

Figure F-2. Fort A.P. Hill Forest Management 5-Year Plan Timber Stand Improvements

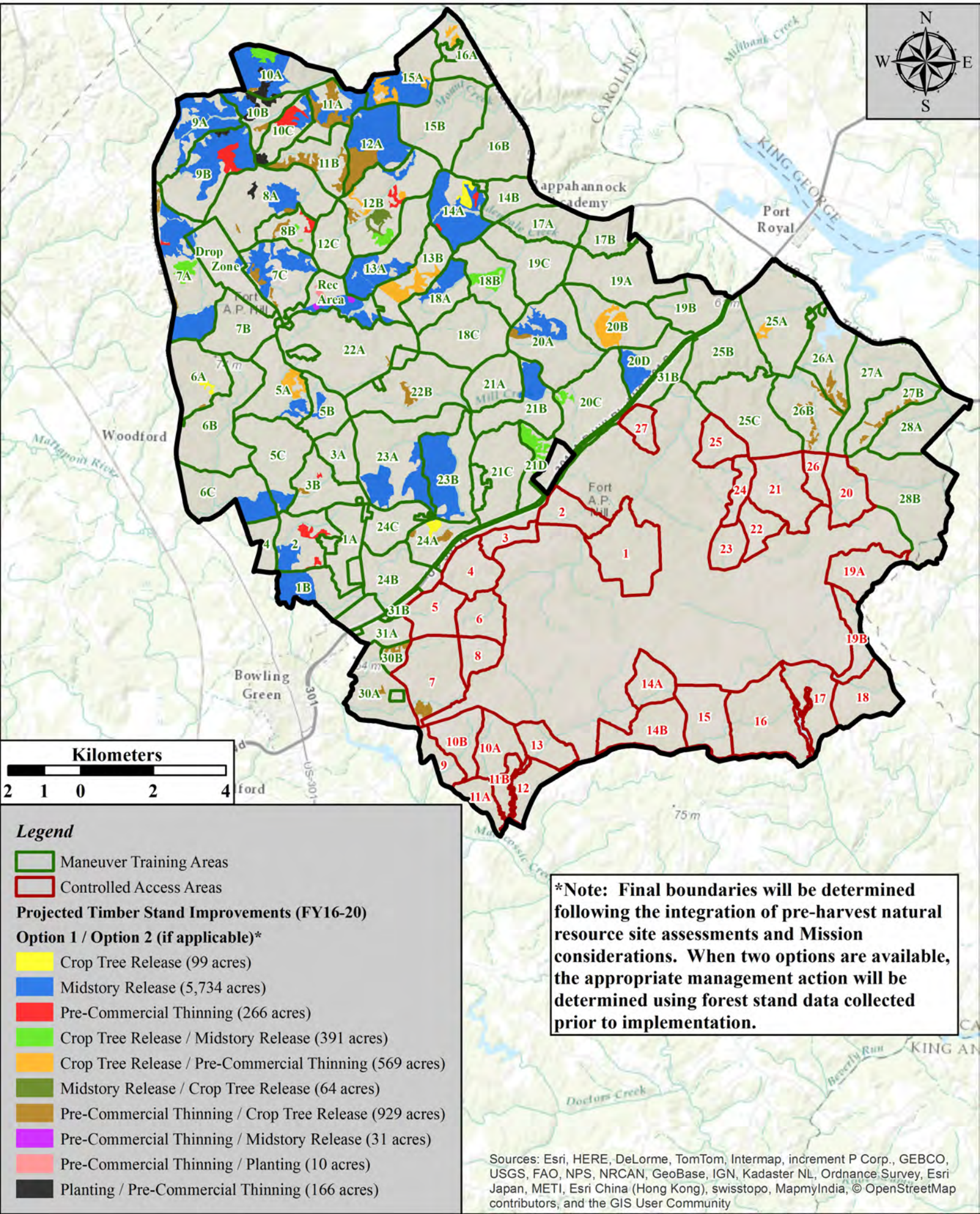

Figure F-3. Fort A.P. Hill Forest Management 5-Year Plan Rx Burns FY16

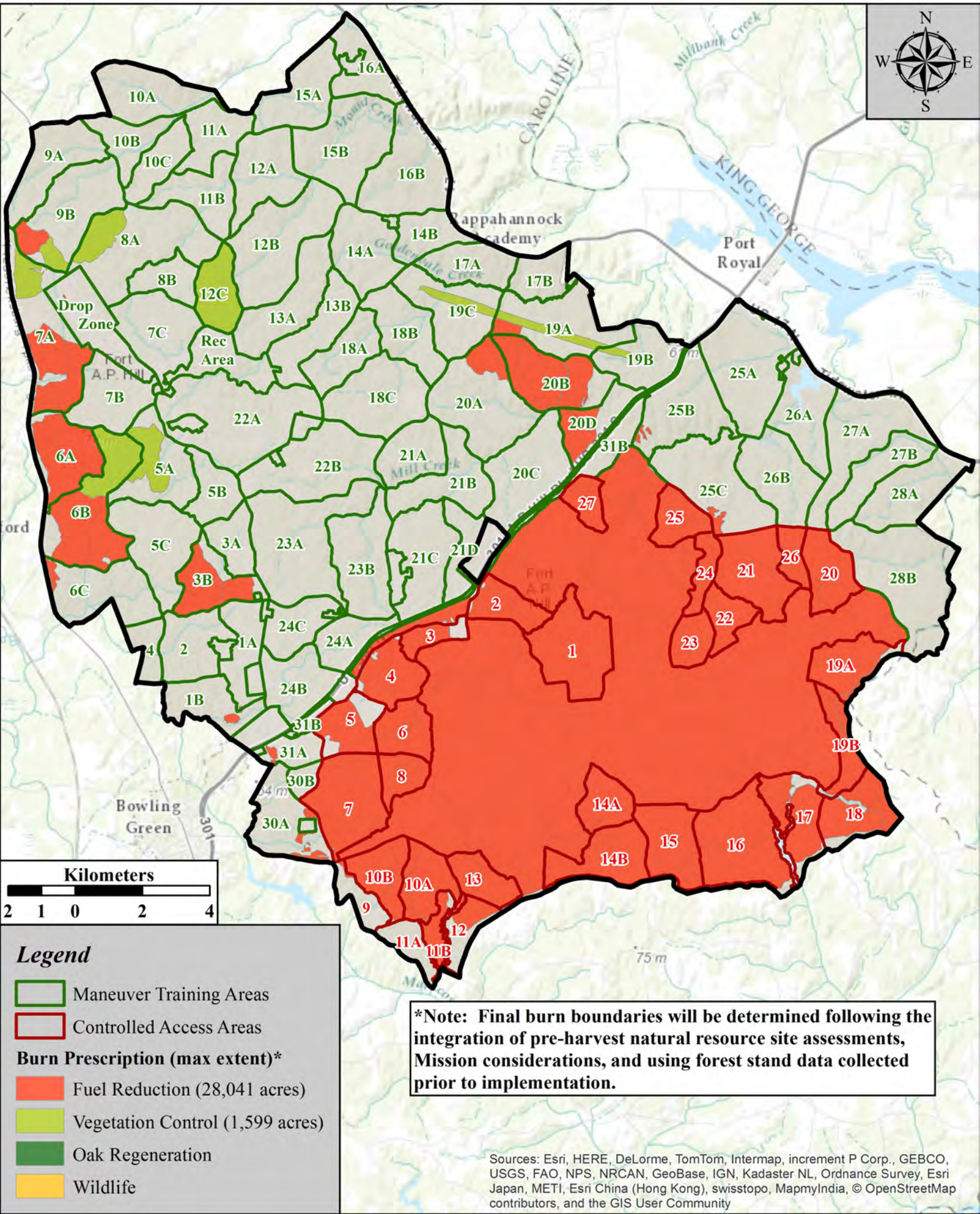

Figure F-4. Fort A.P. Hill Forest Management 5-Year Plan Rx Burns FY17

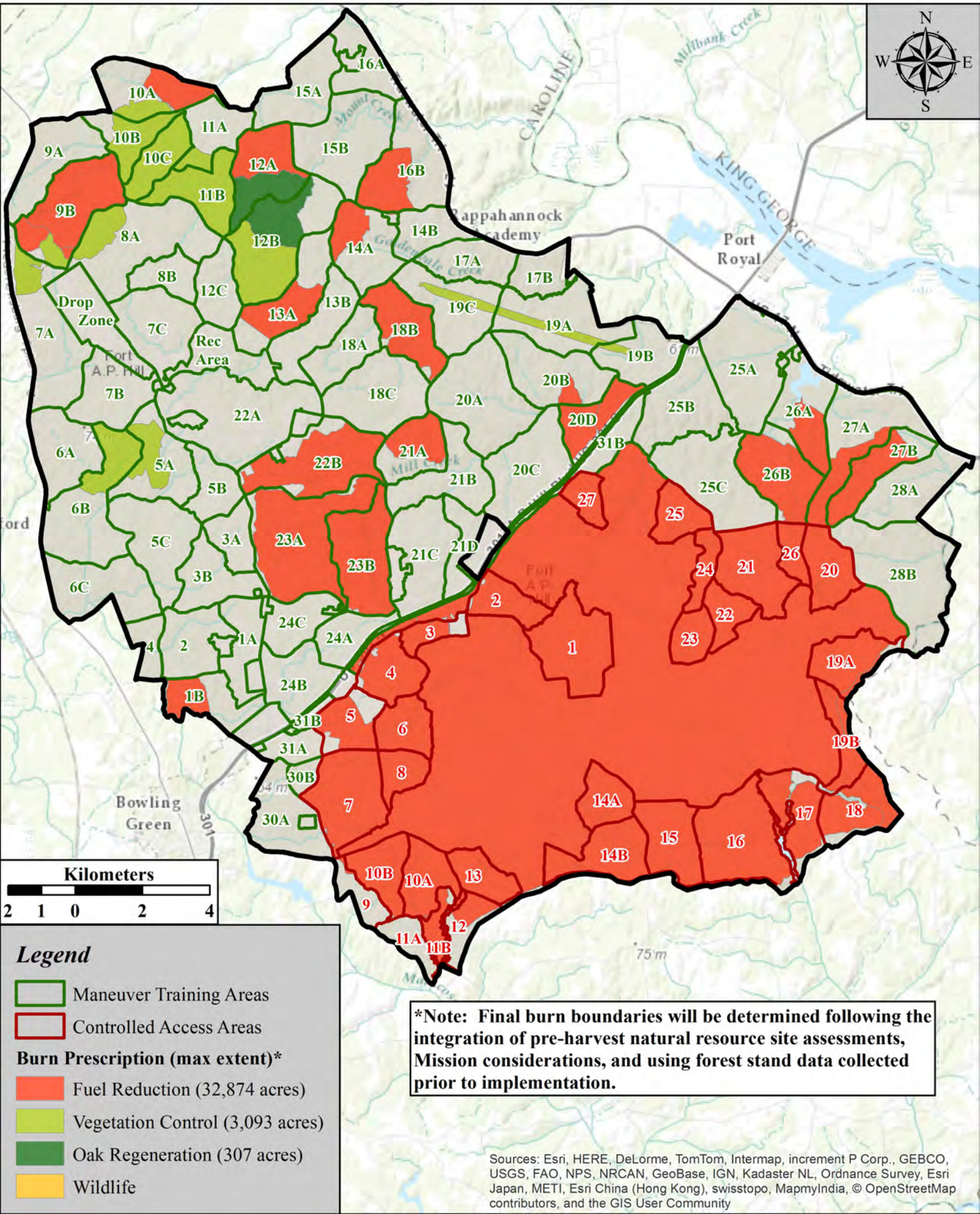

Figure F-5. Fort A.P. Hill Forest Management 5-Year Plan Rx Burns FY18

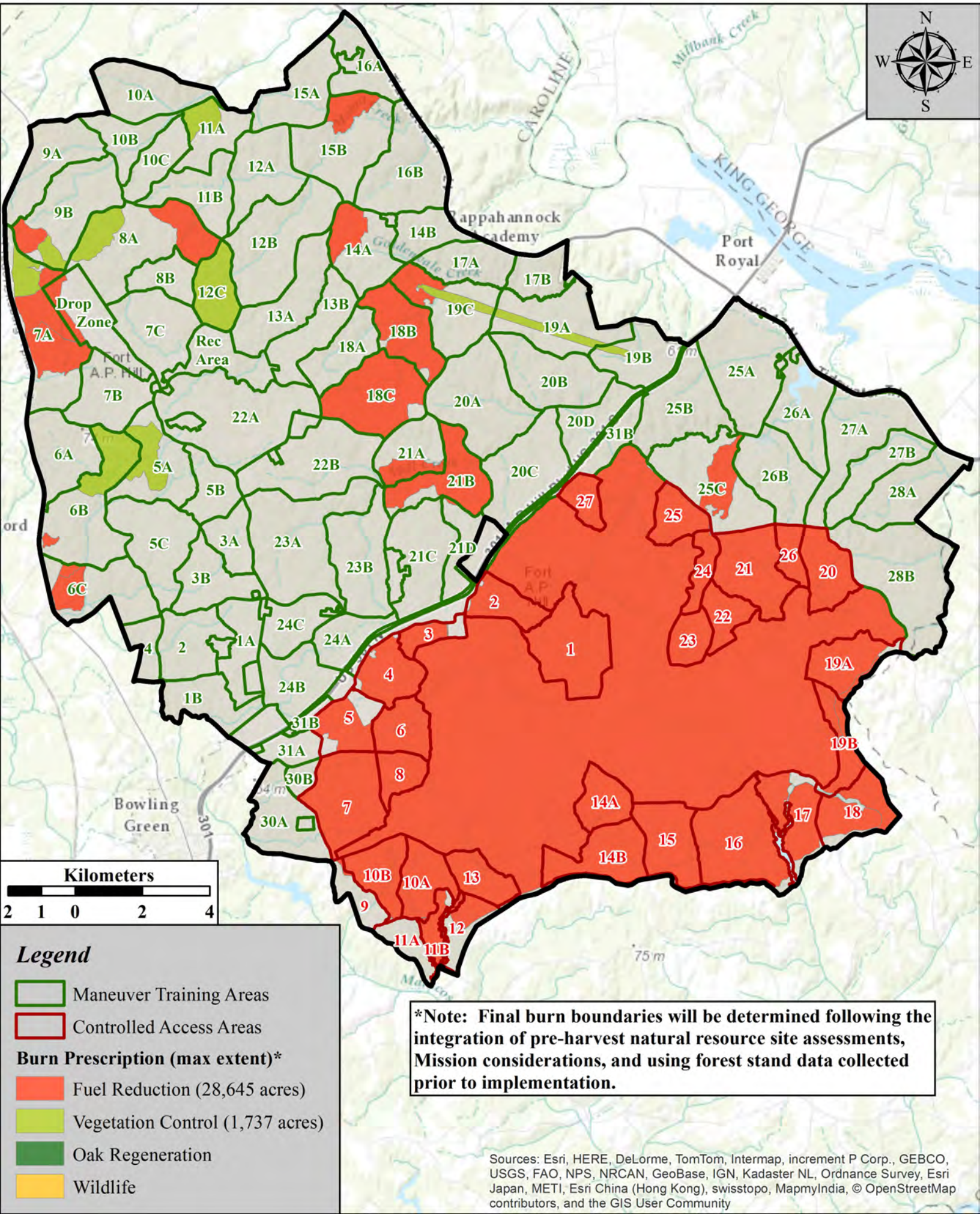

Figure F-6. Fort A.P. Hill Forest Management 5-Year Plan Rx Burns FY19

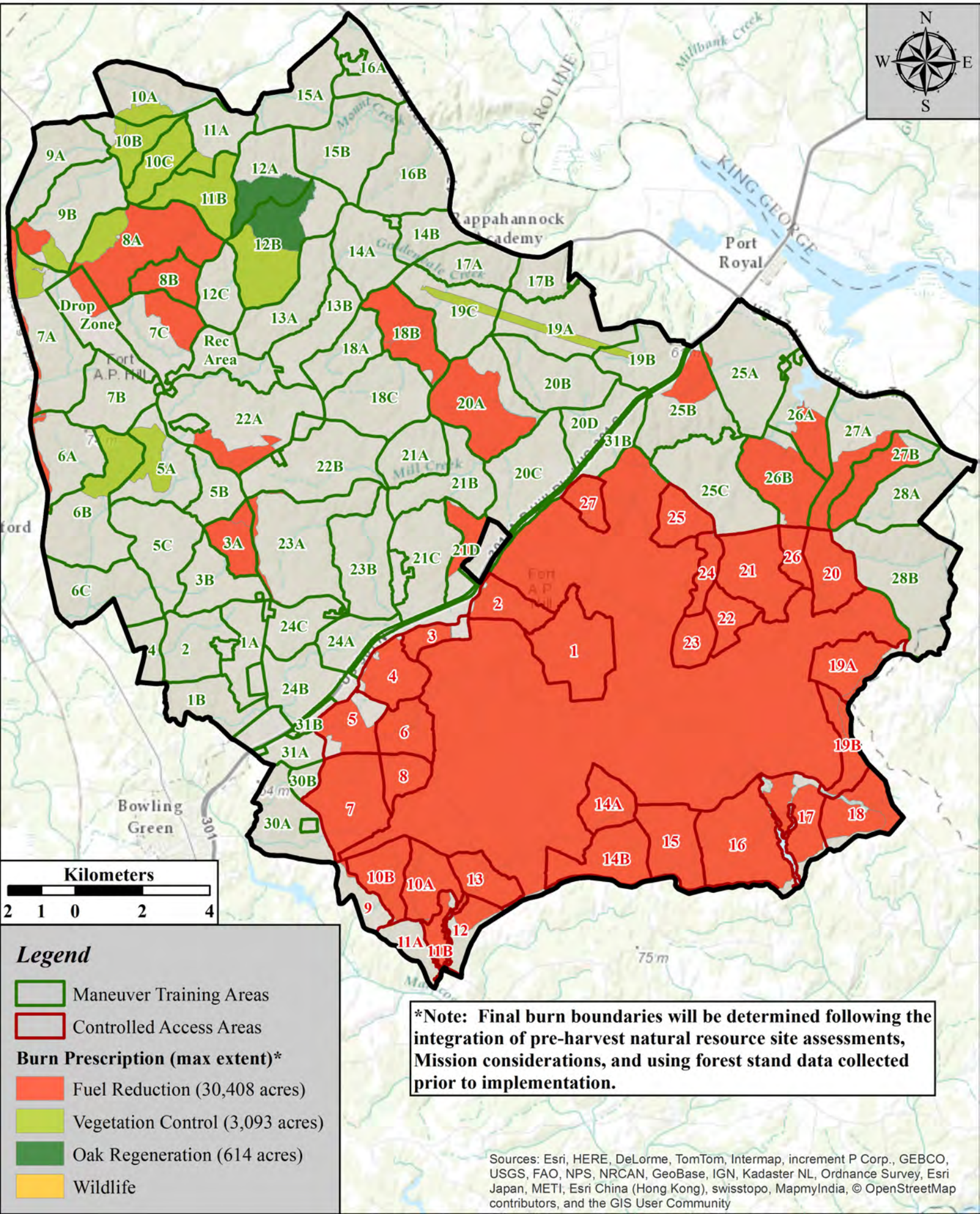

Figure F-7. Fort A.P. Hill Forest Management 5-Year Plan Rx Burns FY20

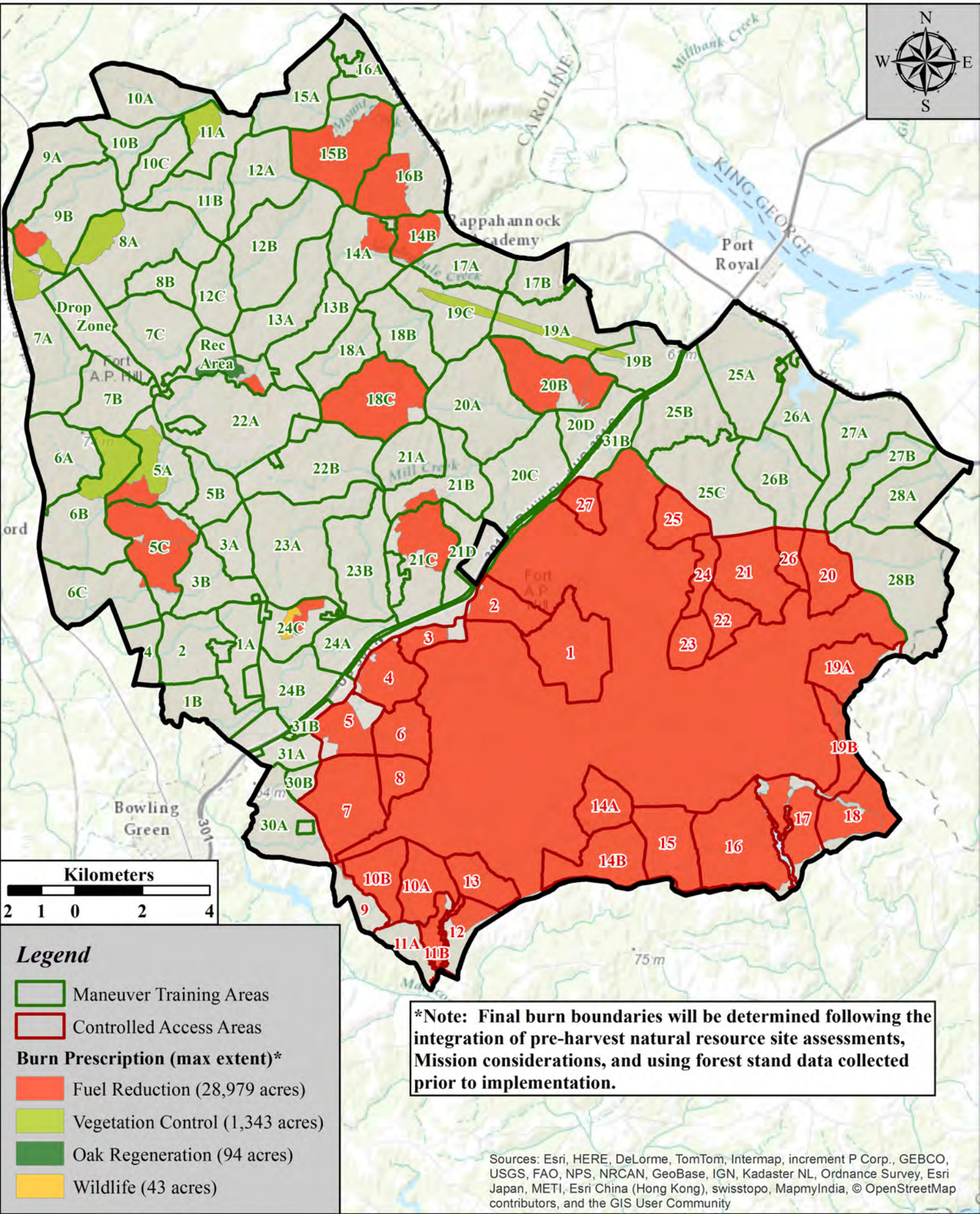

Table F-1. Forest Management Unit (FMU) Conditions Key

Common Land Unit Forest Communities*		**Size Class (inches)**	**Density Categories**		
			Understory*	***Mid-Story****	***Overstory*****
Bch	Beech	Regeneration (x ≤ 4.9)	Low (x ≤ 200)	Low (x ≤ 50)	Low (x ≤ 50)
COk	Chestnut oak	Small (5 - 9.9)	Medium (201 – 599)	Medium (51 – 199)	Medium (51 – 99)
Hic	Hickory	Medium (10 – 14.9)	High (x ≥ 600)	High (x ≥ 200)	High (x ≥ 100)
Lob	Loblolly pine	Large (x ≥ 15)			
Map	Maple				
Pop	Yellow-poplar				
ROk	Red oak				
Sgm	Sweetgum				
Vir	Virginia pine				
WOk	White oak				

*A forest community can be dominated by any combination of any one or two of the species identified.
**Trees/Acre
***Basal Area (ft^2/acre)

Table F-2. Summary of Desired Future Conditions (c.2008)

	Acres	% of Total Acres
Total FMU Acres	**66,773**	**100%**
Covertype		
Hardwood	24,090	36%
Mixed	33,706	50%
Pine	8,976	13%
Size Class		
Large	42,448	64%
Medium	21,268	32%
Small	2,791	4%
Regeneration	265	0%
Management		
Active	41,745	63%
Passive	18,794	28%
Restorative	6,233	9%
Understory Density		
Low	37,933	57%
Medium	21,422	32%
High	7,417	11%
Mid-Story Density		
Low	15,154	23%
Medium	49,312	74%
High	2,307	3%
Overstory Density		
Low	13,118	20%
Medium	47,161	71%
High	6,494	10%

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
01ANA	15.5	ROkSgm	Hardwood	Large	High	Medium	Medium	Bowies Pond	Passive	Forest Reserve Area - SMZ/Hydric area
01ANB	133.3	LobVir	Pine	Large	Low	Medium	Medium	Bowies Pond	Active	Aesthetics - AP Hill Drive
01ASA	66.0	Lob	Pine	Large	Low	Medium	Medium	Gregg Pond	Active	Aesthetics - RV and camp ground area
01ASB	137.1	WOkLob	Mixed	Large	Low	Low	Medium	Gregg Pond	Restorative	Eagle management zones
01BA	187.3	VirROk	Mixed	Medium	Medium	Medium	Medium	Gregg Pond	Restorative	Installation boundary and TES buffer
01BB	182.0	LobROk	Mixed	Large	Medium	Medium	Medium	Gregg Pond	Passive	TES buffer for small whorled pogonia
01BC	84.0	LobWOk	Mixed	Large	Medium	Medium	Medium	Gregg Pond	Passive	Aesthetics - headquarters area
02A	132.5	LobPop	Mixed	Medium	Medium	Medium	Medium	Bowies Pond	Active	Structural diversity component
02B	213.4	LobROk	Mixed	Large	Medium	Medium	Medium	Bowies Pond	Active	Structural diversity component
02C	126.6	ROkWOk	Hardwood	Medium	Medium	Medium	Medium	Bowies Pond	Active	Structural diversity component - oak mgmt
02D	35.0	PopMap	Hardwood	Large	Medium	Medium	Medium	Bowies Pond	Passive	SMZ / Hydric area
03AA	130.7	Lob	Pine	Large	Low	Medium	Medium	Bowies Pond	Active	Aesthetics - AP Hill Drive
03AB	138.4	LobROk	Mixed	Large	Medium	Low	Medium	Bowies Pond	Active	Structural diversity component - consider TES
03BA	188.0	LobROk	Mixed	Large	Low	Medium	Medium	Bowies Pond	Active	Desired training setting - TCA's, CSS
03BB	81.8	LobVir	Pine	Large	Low	Medium	Medium	Bowies Pond	Active	Desired training setting - TCA's, CSS
03BC	119.2	LobVir	Pine	Small	High	Medium	Low	Bowies Pond	Active	Pine diversity area
03BD	108.1	PopWOk	Hardwood	Large	Medium	Medium	Medium	Bowies Pond	Passive	SMZ / Hydric area and TES
04A	97.8	LobROk	Mixed	Large	Low	Low	Medium	Bowies Pond	Active	Desired training setting - TCA
04B	62.6	PopVir	Mixed	Medium	High	Medium	Low	Bowies Pond	Restorative	SMZ / Hydric area and installation boundary
04C	56.0	ROkLob	Mixed	Large	Medium	Medium	Medium	Bowies Pond	Active	Structural diversity component - increase hardwood
05AA	59.9	LobVir	Pine	Large	Low	Low	Medium	Bowies Pond	Active	Desired training setting - TCA
05AB	91.5	LobWOk	Mixed	Medium	Medium	Medium	Medium	Bowies Pond	Active	Structural diversity component
05AC	234.2	LobWOk	Mixed	Large	Low	Low	Low	Bowies Pond	Active	Desired training setting - Maneuver Corridor A
05AD	50.2	PopMap	Hardwood	Large	High	Medium	Medium	Bowies Pond	Passive	SMZ / Hydric area
05AE	98.3	WOkLob	Mixed	Large	Medium	Medium	Medium	Bowies Pond	Restorative	TES buffer area
05AF	97.9	ROkLob	Mixed	Large	Low	Medium	Medium	Bowies Pond	Active	Structural diversity component - near food plots
05BA	74.8	Lob	Pine	Medium	Low	Low	Medium	Bowies Pond	Active	Desired training setting - Infantry lane, TES
05BB	113.5	WOkLob	Mixed	Medium	Medium	Medium	Medium	Bowies Pond	Active	Desired training setting - Infantry lane
05BC	147.6	Lob	Pine	Large	Low	Low	Medium	Bowies Pond	Active	Structural diversity and desired training setting
05BD	20.9	WOkPop	Hardwood	Large	Medium	Medium	Medium	Bowies Pond	Passive	SMZ / Hydric area and TES
05CA	301.9	ROkPop	Hardwood	Large	Medium	Medium	Medium	Bowies Pond	Restorative	TES buffer area
05CB	199.5	Lob	Pine	Medium	Medium	Medium	Medium	Bowies Pond	Active	Pine diversity area
05CC	222.2	WOkLob	Mixed	Large	Medium	Medium	Medium	Bowies Pond	Restorative	TES buffer area
05CD	58.1	WOkROk	Hardwood	Medium	Low	Medium	Low	Bowies Pond	Active	Structural diversity component - oak mgmt
06AA	74.1	WOkPop	Hardwood	Medium	High	High	Medium	Bowies Pond	Passive	Installation boundary
06AB	261.1	LobVir	Pine	Small	High	High	Low	Bowies Pond	Active	Pine diversity area
06AC	227.0	LobPop	Mixed	Medium	Medium	Medium	Medium	Bowies Pond	Active	Structural diversity component
06AD	37.8	WOkPop	Hardwood	Large	High	Medium	Medium	Bowies Pond	Passive	SMZ / Hydric area
06BA	130.7	LobROk	Mixed	Medium	Low	Medium	Medium	Bowies Pond	Active	Structural diversity component
06BB	93.3	LobWOk	Mixed	Large	Low	Low	Low	Bowies Pond	Active	Desired training setting - Maneuver Corridor A
06BC	133.2	LobVir	Pine	Medium	Medium	Medium	Medium	Bowies Pond	Active	Pine diversity area
06BD	207.6	PopSgm	Hardwood	Large	High	Medium	Medium	Bowies Pond	Passive	SMZ / Hydric area

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
06BE	162.8	Lob	Pine	Medium	Low	Medium	Medium	Bowies Pond	Active	Pine diversity area
06BF	175.8	WOkPop	Hardwood	Large	Low	Medium	Medium	Bowies Pond	Active	Structural diversity component - increase hardwood
06BG	81.0	LobWOk	Mixed	Medium	Medium	Medium	Medium	Bowies Pond	Active	Structural diversity component
06CA	114.0	Lob	Pine	Large	Medium	Medium	Medium	Bowies Pond	Active	Pine diversity area
06CB	108.9	ROkPop	Hardwood	Medium	Medium	Medium	Medium	Bowies Pond	Active	Structural diversity component
06CC	228.7	LobWOk	Mixed	Large	Medium	Low	Medium	Bowies Pond	Restorative	White pine restoration area
06CD	122.5	WOkPop	Hardwood	Large	Medium	Medium	Medium	Bowies Pond	Passive	SMZ / Hydric area and installation boundary
06CE	160.8	WOkLob	Mixed	Large	Low	Medium	Medium	Bowies Pond	Active	Structural diversity component - consider TES
07AA	91.1	VirWOk	Mixed	Medium	High	Medium	Medium	Meadows Creek	Restorative	Installation boundary
07AB	201.0	ROkWOk	Hardwood	Large	Low	Medium	Medium	Meadows Creek	Active	Desired training setting - Maneuver Corridor B
07AC	213.7	WOkLob	Mixed	Small	High	Medium	Medium	Meadows Creek	Active	Structural diversity component
07AD	57.8	PopSgm	Hardwood	Large	High	Medium	Medium	Meadows Creek	Passive	SMZ / Hydric area
07AE	160.9	LobVir	Pine	Small	High	Medium	Low	Meadows Creek	Active	Pine diversity area
07AF	334.6	WOkVir	Mixed	Medium	Medium	Medium	Medium	Meadows Creek	Active	Structural diversity component - increase oak
07BA	120.7	LobVir	Pine	Small	Medium	High	Medium	Meadows Creek	Active	Desired training setting - drop zone
07BB	192.0	LobWOk	Mixed	Large	Medium	Medium	Medium	Meadows Creek	Active	Aesthetics - Boy Scout area
07BC	51.6	WOkLob	Mixed	Large	Low	Low	Medium	Meadows Creek	Active	Desired training setting - campsites
07BD	53.0	SgmMap	Hardwood	Large	High	Medium	Medium	Meadows Creek	Passive	SMZ / Hydric area
07CA	137.3	VirROk	Mixed	Medium	Medium	Low	Medium	Mount Creek	Active	Structural diversity component
07CB	233.5	WOkLob	Mixed	Large	Low	Medium	Medium	Mount Creek	Active	Desired training setting - campsites
07CC	168.4	LobVir	Pine	Large	Low	Medium	Low	Mount Creek	Active	Desired training setting - campsites
07CD	108.0	WOkPop	Hardwood	Large	High	Medium	Medium	Mount Creek	Passive	SMZ / Hydric area
08AA	106.2	LobWOk	Mixed	Large	Low	Low	Low	Mount Creek	Active	Desired training setting - Maneuver Corridor C
08AB	166.9	LobVir	Pine	Small	High	Medium	Medium	Mount Creek	Active	Pine diversity area
08AC	311.7	WOkPop	Hardwood	Medium	Medium	Medium	Medium	Mount Creek	Active	Desired training setting
08AD	115.9	PopSgm	Hardwood	Large	Medium	Medium	Medium	Mount Creek	Passive	SMZ / Hydric area
08AE	277.1	LobROk	Mixed	Medium	Medium	Medium	Medium	Mount Creek	Active	Structural diversity component
08AF	140.4	Lob	Pine	Large	Low	Low	Medium	Mount Creek	Active	Desired training setting - CACTF
08BA	87.8	VirHic	Mixed	Small	High	Medium	Medium	Mount Creek	Active	Desired training setting - drop zone
08BB	102.4	LobVir	Pine	Medium	Low	Medium	Medium	Mount Creek	Active	Pine diversity area
08BC	148.7	LobVir	Pine	Large	Low	Low	Medium	Mount Creek	Active	Desired training setting - CACTF
08BD	54.8	SgmMap	Hardwood	Large	High	Medium	Medium	Mount Creek	Passive	SMZ / Hydric area
09AA	59.5	VirWOk	Mixed	Medium	High	High	Medium	Ware Creek	Restorative	Installation boundary
09AB	124.2	LobWOk	Mixed	Medium	Medium	Medium	Medium	Ware Creek	Active	Structural diversity component
09AC	120.3	ROkWOk	Hardwood	Large	Medium	Medium	Low	Ware Creek	Active	Structural diversity component - oak mgmt
09AD	75.4	PopSgm	Hardwood	Large	Medium	Medium	Medium	Ware Creek	Passive	SMZ / Hydric area
09AE	98.2	Lob	Pine	Medium	Medium	Medium	Medium	Ware Creek	Active	Pine diversity component
09AF	165.0	WOkPop	Hardwood	Large	Low	Low	High	Ware Creek	Active	Structural diversity component
09BA	185.8	WOkLob	Mixed	Large	Medium	Medium	Medium	Ware Creek	Active	Structural diversity component
09BB	348.1	LobWOk	Mixed	Large	Low	Medium	Medium	Ware Creek	Active	Structural diversity component
09BC	131.5	WOkROk	Hardwood	Large	Medium	Medium	Low	Ware Creek	Active	Structural diversity component - oak mgmt
09BD	70.1	PopWOk	Hardwood	Large	Medium	Medium	Medium	Ware Creek	Passive	SMZ / Hydric area

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
10AA	102.9	WOkCOk	Hardwood	Large	Low	Low	High	Ware Creek	Restorative	Installation boundary, cultural resources
10AB	110.0	COkWOk	Hardwood	Medium	Medium	Medium	Medium	Ware Creek	Active	Structural diversity component - oak mgmt
10AC	129.3	LobPop	Mixed	Medium	Medium	Medium	Medium	Ware Creek	Active - long rotation	Structural diversity component
10AD	100.9	PopWOk	Hardwood	Large	Medium	Medium	Medium	Ware Creek	Passive	SMZ / Hydric area
10AE	191.8	ROkLob	Mixed	Medium	Low	Low	Medium	Ware Creek	Active	Structural diversity component
10BA	91.2	ROkPop	Hardwood	Large	High	Medium	Medium	Ware Creek	Active	Structural diversity component
10BB	144.1	ROkLob	Mixed	Medium	Low	Low	Medium	Ware Creek	Active	Structural diversity component
10BC	57.1	LobWOk	Mixed	Large	Medium	Medium	Medium	Ware Creek	Active	Structural diversity component
10BD	67.3	SgmMap	Hardwood	Large	Medium	Medium	Medium	Ware Creek	Passive	SMZ / Hydric area
10CA	93.2	LobVir	Pine	Large	Medium	Medium	Medium	Ware Creek	Active	Pine diversity component
10CB	63.6	ROkWOk	Hardwood	Large	Low	Medium	Low	Ware Creek	Active	Structural diversity component - oak mgmt
10CC	163.5	LobVir	Pine	Small	High	Medium	Medium	Ware Creek	Active	Pine diversity component
10CD	47.1	WOkPop	Hardwood	Large	Medium	Medium	High	Ware Creek	Active - UEA	Structural diversity, slopes, and hydric areas
11AA	77.3	WOkPop	Hardwood	Large	Low	Medium	Medium	Ware Creek	Active	Structural diversity component
11AB	198.4	VirPop	Mixed	Medium	Low	Medium	Medium	Ware Creek	Active	Desired training setting
11AC	75.4	PopWOk	Hardwood	Large	Low	Medium	Medium	Ware Creek	Active	Structural diversity component
11AD	10.6	SgmMap	Hardwood	Large	Medium	Medium	Medium	Ware Creek	Passive	SMZ / Hydric area
11BA	114.1	VirROk	Mixed	Medium	Low	Medium	Medium	Mount Creek	Active	Desired training setting - TCA
11BB	113.0	WOkLob	Mixed	Large	Low	Medium	Medium	Mount Creek	Active	Structural diversity component
11BC	88.2	WOkPop	Hardwood	Large	Low	Medium	Medium	Mount Creek	Active	Structural diversity component
11BD	72.6	PopMap	Hardwood	Large	High	Medium	Medium	Mount Creek	Passive	SMZ / Hydric area
11BE	85.2	Vir	Pine	Medium	Low	Low	Medium	Mount Creek	Active	Desired training setting
11BF	121.4	WOkLob	Mixed	Large	Low	Medium	Medium	Mount Creek	Active	Structural diversity component - increase hardwood
12AA	187.9	COkPop	Hardwood	Large	Low	Medium	Medium	Mount Creek	Active	Desired training setting - CSS
12AB	114.9	WOkLob	Mixed	Large	Low	Low	Medium	Mount Creek	Active	Desired training setting - CSS
12AC	169.3	LobVir	Pine	Small	High	Medium	Medium	Mount Creek	Active	Pine diversity area
12AD	79.0	PopWOk	Hardwood	Large	Medium	Medium	Medium	Mount Creek	Passive	SMZ / Hydric area
12AE	162.8	WOkHic	Hardwood	Large	Medium	Low	Low	Mount Creek	Restorative	Slopes
12BA	291.7	LobWOk	Mixed	Large	Medium	Low	Medium	Mount Creek	Active	Desired training setting - Shoothouse, CACTF
12BB	314.0	WOkLob	Mixed	Large	Low	Low	Medium	Mount Creek	Active	Desired training setting - Maneuver Corridor D
12BC	284.0	LobWOk	Mixed	Medium	Medium	High	Low	Mount Creek	Active	Structural diversity component
12BD	84.5	WOkSgm	Hardwood	Large	High	Medium	Medium	Mount Creek	Passive	SMZ / Hydric area
12CA	60.4	WOkSgm	Hardwood	Large	Low	Low	Medium	Mount Creek	Active	Desired training setting - CACTF
12CB	96.8	Lob	Pine	Medium	Medium	High	Medium	Mount Creek	Active	Pine diversity area
12CC	61.1	VirPop	Mixed	Small	Low	Medium	Medium	Mount Creek	Active	Structural diversity component
12CD	64.4	PopWOk	Hardwood	Large	High	Medium	Medium	Mount Creek	Passive	SMZ / Hydric area
12CE	89.5	WOkVir	Mixed	Large	Low	Low	Medium	Mount Creek	Active	Desired training setting - CSS
13AA	187.3	WOkPop	Hardwood	Large	Low	Medium	Medium	Goldenvale Creek	Active	Remove Vir, consider slopes and TES
13AB	226.2	LobWOk	Mixed	Medium	Medium	Medium	Medium	Goldenvale Creek	Active - short rotation	Structural diversity component
13AC	212.9	WOkROk	Hardwood	Large	Low	Medium	Medium	Goldenvale Creek	Active	Convert to hardwood, wildlife value - oak mgmt
13AD	42.9	PopMap	Hardwood	Large	High	Medium	High	Goldenvale Creek	Passive	SMZ / Hydric area
13BA	111.3	ROkWOk	Hardwood	Large	Low	Medium	Medium	Goldenvale Creek	Active	Maneuver Corridor E

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
13BB	297.1	WOkLob	Mixed	Large	Low	Medium	Medium	Goldenvale Creek	Active	Maneuver Corridor E
13BC	21.8	PopMap	Hardwood	Large	High	Medium	High	Goldenvale Creek	Passive	SMZ / Hydric area
13BD	86.1	LobWOk	Mixed	Medium	Medium	Medium	Low	Goldenvale Creek	Active	Boy scout area
14A	156.7	LobWOk	Mixed	Medium	Medium	Medium	Medium	Goldenvale Creek	Active	Structural diversity component - facilities
14B	115.8	ROkWOk	Hardwood	Large	High	Medium	Low	Goldenvale Creek	Active	Structural diversity component - favor oak
14C	268.8	WOkROk	Hardwood	Large	Low	Medium	Medium	Goldenvale Creek	Active	Large hardwood area conversion
14D	64.0	SgmMap	Hardwood	Large	High	Medium	Medium	Goldenvale Creek	Passive	SMZ / Hydric area and TES buffer
15ANA	90.5	WOkPop	Hardwood	Large	Medium	Medium	Medium	Ware Creek	Passive	Forest reserve area
15ANB	131.4	PopROk	Hardwood	Large	Medium	Medium	Medium	Ware Creek	Active	Structural diversity component
15ASA	326.3	WOkROk	Hardwood	Large	Medium	Medium	Medium	Mount Creek	Active	Structural diversity component - oak mgmt
15ASB	27.6	WOkPop	Hardwood	Large	High	Medium	Medium	Mount Creek	Passive	SMZ / Hydric area
15BA	513.7	PopROk	Hardwood	Large	Low	Medium	High	Mount Creek	Passive	SMZ / Hydric area and FRA / Conservation area
15BB	191.0	ROkPop	Hardwood	Medium	Medium	Medium	Medium	Mount Creek	Active	Structural diversity component
15BC	202.8	LobPop	Mixed	Large	Low	Low	Medium	Mount Creek	Active	Desired training setting - CSS
16AA	112.2	BchROk	Hardwood	Large	Low	Low	High	Ware Creek	Restorative	Installation boundary
16AB	73.2	PopWOk	Hardwood	Medium	Medium	Medium	Medium	Ware Creek	Active - UEA	Structural diversity component
16AC	188.8	BchPop	Hardwood	Large	Medium	Medium	Medium	Ware Creek	Passive	Forest reserve area
16BA	817.6	PopWOk	Hardwood	Large	Low	Medium	Medium	Mount Creek	Passive	Forest reserve area
16CA	234.9	ROkLob	Mixed	Medium	Low	Low	High	Goldenvale Creek	Active	Desired training and wildlife settings
16CB	88.4	LobROk	Mixed	Large	Low	Medium	Medium	Goldenvale Creek	Passive	Forest reserve area
16CC	9.0	PopMap	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	SMZ / Hydric area
17AA	155.8	PopWOk	Hardwood	Medium	High	Medium	Medium	Goldenvale Creek	Active	Structural diversity component
17AB	196.1	WOkPop	Hardwood	Medium	High	Medium	Medium	Goldenvale Creek	Active - UEA	Structural diversity component
17AC	151.0	WOkPop	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	Installation boundary and forest reserve area
17AD	107.5	WOkPop	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	SMZ / Hydric area
17BA	116.8	WOkSgm	Hardwood	Large	Medium	Low	High	Goldenvale Creek	Passive	SMZ / Hydric area and slopes
17BB	205.9	LobPop	Mixed	Small	High	Low	Medium	Goldenvale Creek	Active	Structural diversity component
17BC	120.4	WOkSgm	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	Forest reserve area - ecological component
18AA	144.2	WOkHic	Hardwood	Medium	Medium	Medium	Medium	Goldenvale Creek	Active - UEA	Structural diversity component - oak mgmt
18AB	90.1	LobROk	Mixed	Large	Low	Medium	High	Goldenvale Creek	Active	Maneuver corridor
18AC	190.6	WOkLob	Mixed	Medium	Medium	Medium	Medium	Goldenvale Creek	Active	Decrease Vir, possible maneuver corridor
18AD	19.4	PopMap	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	SMZ / Hydric area
18BA	186.7	PopVir	Mixed	Medium	Medium	Medium	Medium	Goldenvale Creek	Active	Structural diversity component
18BB	142.7	WOkPop	Hardwood	Large	Low	Low	Medium	Goldenvale Creek	Active	Desired training setting - TCA
18BC	186.3	PopROk	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Active - UEA	Desired wildlife setting near food plots
18BD	53.4	SgmMap	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	SMZ / Hydric area
18CA	251.8	LobWOk	Mixed	Medium	Low	Medium	Medium	Goldenvale Creek	Active	Desired training setting - CSS, decrease Vir
18CB	218.0	LobWOk	Mixed	Large	Low	Low	Low	Goldenvale Creek	Active	Pine-oak savanna setting
18CC	273.1	Lob	Pine	Large	Low	Medium	High	Goldenvale Creek	Active	Maneuver corridor F
18CD	44.1	SgmMap	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	SMZ / Hydric area
18CE	10.1	LobVir	Pine	Medium	High	High	Medium	Goldenvale Creek	Passive	Landfill
19AA	731.1	ROkWOk	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	Forest reserve area

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
19AB	83.0	LobVir	Pine	Medium	Low	Medium	Medium	Goldenvale Creek	Active	Manage for low fuel loads
19AC	185.0	Lob	Pine	Small	High	High	Low	Goldenvale Creek	Active	Pine diversity component - laser range shield
19BA	301.9	PopWOk	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	Forest reserve area
19BB	121.3	WOkPop	Hardwood	Large	High	Medium	Medium	Goldenvale Creek	Active	Structural diversity component - convert to hardwood
20AA	292.5	Lob	Pine	Medium	Medium	Medium	Medium	Mill Creek	Active	Pine diversity component
20AB	158.0	ROkWOk	Hardwood	Large	Low	Medium	Medium	Mill Creek	Passive	Steep slopes
20AC	358.5	WOkPop	Hardwood	Large	Low	Low	Medium	Mill Creek	Active	Structural diversity area, training access
20AD	80.4	ROkMap	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
20AE	126.3	PopLob	Mixed	Medium	Medium	Low	Medium	Mill Creek	Active	Structural diversity component
20BA	202.1	PopLob	Mixed	Large	Low	Medium	Low	Mill Creek	Active	Structural diversity component
20BB	216.0	PopWOk	Hardwood	Large	Low	Medium	Medium	Mill Creek	Active - UEA	Structural diversity component
20BC	58.2	LobWOk	Mixed	Medium	Medium	Medium	Medium	Mill Creek	Active	Structural diversity component
20BD	44.5	PopSgm	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
20CA	194.8	WOkLob	Mixed	Medium	Medium	Low	Medium	Mill Creek	Active	Structural diversity component
20CB	186.7	Lob	Pine	Medium	High	Medium	Low	Mill Creek	Active	Pine diversity component
20CC	169.6	WOkPop	Hardwood	Large	Low	Low	High	Mill Creek	Passive	Steep slopes
20CD	50.3	PopWOk	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area and eagle area
20CE	171.1	LobWOk	Mixed	Large	Medium	Medium	Medium	Mill Creek	Restorative	Slopes and eagle area
20CF	15.7	LobVir	Pine	Medium	High	High	Medium	Mill Creek	Restorative	Installation boundary
20DA	146.3	WOkROk	Hardwood	Large	Medium	Medium	Low	Mill Creek	Active	Structural diversity component - oak mgmt
20DB	57.9	LobVir	Pine	Small	High	High	Low	Mill Creek	Active	Pine diversity component
20DC	99.4	WOkPop	Hardwood	Large	Low	Medium	Medium	Mill Creek	Active	Structural diversity component
20DD	62.7	PopWOk	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
21AA	141.6	LobWOk	Mixed	Medium	Low	Medium	Medium	Mill Creek	Active	Structural diversity component - blend covers
21AB	192.3	LobHic	Mixed	Medium	Low	Medium	Medium	Mill Creek	Active	Structural diversity component - blend covers
21AC	104.9	LobWOk	Mixed	Large	Medium	Medium	Medium	Mill Creek	Active	Structural diversity component
21AD	33.5	MapSgm	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
21BA	140.1	WOkROk	Hardwood	Large	Low	Medium	Medium	Mill Creek	Active	Structural diversity component - oak mgmt
21BB	250.4	ROkLob	Mixed	Large	Low	Low	Medium	Mill Creek	Active	Desired training setting
21BC	158.9	ROkLob	Mixed	Medium	Medium	Low	Medium	Mill Creek	Active	Structural diversity component
21BD	56.4	MapSgm	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
21CA	151.8	ROkPop	Hardwood	Large	Low	Medium	High	Mill Creek	Active	Desired training setting - TCA's
21CB	213.6	LobWOk	Mixed	Medium	Low	Medium	Medium	Mill Creek	Active	Desired training setting
21CC	126.3	Lob	Pine	Large	Low	Low	High	Mill Creek	Active	Desired training setting
21CD	89.3	ROkPop	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
21CE	74.2	VirWOk	Mixed	Small	High	Medium	Medium	Mill Creek	Active	Structural diversity component
21DA	164.5	LobWOk	Mixed	Medium	Low	Low	Medium	Mill Creek	Active	Desired training setting
21DB	122.7	WOkLob	Mixed	Medium	Medium	Low	Medium	Mill Creek	Active	Structural diversity component
21DC	25.3	PopSgm	Hardwood	Medium	High	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
22ANA	97.5	ROkSgm	Hardwood	Large	Low	Low	High	Goldenvale Creek	Passive	Forest reserve area - historic district
22ANB	53.1	PopWOk	Hardwood	Large	Low	Low	Medium	Goldenvale Creek	Restorative	Aesthetics - Heth and cabins
22ANC	122.5	LobVir	Pine	Medium	Low	Medium	Medium	Goldenvale Creek	Active	Pine diversity component

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
22AND	477.0	LobROk	Mixed	Large	Low	Medium	Medium	Goldenvale Creek	Active	Desired training setting
22ASA	77.9	LobWOk	Mixed	Large	Medium	Medium	Medium	Bowies Pond	Restorative	Aesthetics - boy scout area and eagle area
22ASB	33.2	Lob	Pine	Large	Medium	Medium	Medium	Bowies Pond	Restorative	Eagle area
22ASC	198.7	LobWOk	Mixed	Large	Low	Medium	Medium	Bowies Pond	Active	Structural diversity component
22ASD	16.0	SgmMap	Hardwood	Large	Medium	Medium	Medium	Bowies Pond	Passive	SMZ/Hydric area and TES
22BA	431.4	LobWOk	Mixed	Large	Medium	Medium	Medium	Mill Creek	Active	Desired training setting - AWG area
22BB	75.8	WOkROk	Hardwood	Medium	Medium	Low	Low	Mill Creek	Active	Structural diversity component - oak mgmt
22BC	169.6	LobPop	Mixed	Large	Low	Medium	Medium	Mill Creek	Active - long rotation	Structural diversity component - TES plants
22BD	62.5	PopSgm	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
22BE	157.0	WOkLob	Mixed	Large	Medium	Medium	Medium	Mill Creek	Active	Structural diversity component - cons area
23AA	141.1	Lob	Pine	Medium	Low	Medium	Medium	Mill Creek	Active	Pine diversity component
23AB	200.5	PopWOk	Hardwood	Medium	Low	Low	Medium	Mill Creek	Active	Structural diversity component
23AC	228.0	LobROk	Mixed	Large	Low	Medium	Medium	Mill Creek	Active	Desired training setting - Infantry lane
23AD	140.0	WOkPop	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
23AE	533.2	LobROk	Mixed	Large	Low	Medium	Medium	Mill Creek	Active	Desired training setting - Infantry lane
23BA	253.5	WOkPop	Hardwood	Large	Low	Medium	Medium	Mill Creek	Active - long rotation	Desired training setting - Wilcox buffer
23BB	198.2	Lob	Pine	Small	High	High	Medium	Mill Creek	Active - short rotation	Pine diversity component
23BC	234.0	ROkWOk	Hardwood	Medium	Low	Medium	Medium	Mill Creek	Active	Desired training setting - Infantry lane, oak mgmt
23BD	77.9	COkPop	Hardwood	Lage	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
23CA	271.0	Lob	Pine	Medium	Medium	Medium	Medium	Gregg Pond	Active - short rotation	Pine diversity component and TCA
23CB	70.9	LobPop	Mixed	Medium	Medium	Low	Medium	Gregg Pond	Active	Increase hardwood component, consider TES
23CC	21.0	SgmMap	Hardwood	Medium	Medium	Medium	Medium	Gregg Pond	Passive	SMZ / Hydric area
24AA	125.0	LobROk	Mixed	Large	Low	Low	High	Gregg Pond	Active	Structural diversity component - park like
24AB	138.5	LobROk	Mixed	Large	Low	Medium	Medium	Gregg Pond	Active	Desired training setting
24AC	26.5	Lob	Pine	Medium	High	Medium	Medium	Gregg Pond	Passive	Installation boundary
24AD	26.8	PopSgm	Hardwood	Large	Medium	Medium	Medium	Gregg Pond	Passive	SMZ / Hydric area
24BA	261.0	Lob	Pine	Medium	Medium	Medium	Medium	Gregg Pond	Active	Pine diversity component
24BB	76.5	LobWOk	Mixed	Large	Low	Low	High	Gregg Pond	Passive	SMZ / TES / Landfill
24BC	29.5	Lob	Pine	Large	Medium	Medium	High	Gregg Pond	Passive	Installation boundary and utility right-of-way
24BD	90.6	PopWOk	Hardwood	Large	Medium	Medium	Medium	Gregg Pond	Passive	SMZ / Hydric
25AA	250.3	PopSgm	Hardwood	Large	Medium	Medium	Medium	Cook Camp	Passive	SMZ / Hydric area and installation boundary
25AB	401.8	LobROk	Mixed	Medium	Medium	Medium	Medium	Cook Camp	Active	Structural diversity component
25AC	268.3	ROkPop	Hardwood	Large	Low	Medium	Medium	Cook Camp	Active	Desired training setting
25BNA	20.4	PopWOk	Hardwood	Medium	High	Medium	Medium	Cook Camp	Restorative	Installation boundary
25BNB	223.7	PopWOk	Hardwood	Large	Low	Medium	Medium	Cook Camp	Active	Desired training setting
25BSA	481.2	ROkPop	Hardwood	Large	Low	Medium	Medium	Mill Creek	Active - UEA	Structural diversity component - slopes
25CA	198.4	Lob	Pine	Medium	Medium	Medium	Medium	Mill Creek	Restorative	EOD complex, pecan tree site
25CB	88.9	LobPop	Mixed	Medium	Medium	Medium	Medium	Mill Creek	Active	Structural diversity component
25CC	691.2	ROkPop	Hardwood	Large	Low	Medium	High	Mill Creek	Passive	SMZ / Hydric area and steep slopes
26AA	357.6	ROkPop	Hardwood	Large	Low	Medium	High	Mill Creek	Passive	Forest reserve area - eagles
26AB	110.1	LobROk	Mixed	Medium	High	High	Medium	Mill Creek	Active	Structural diversity component - sound buffer
26AC	109.5	LobROk	Mixed	Medium	Low	Low	Medium	Mill Creek	Active	Structural diversity component

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
26BA	487.5	ROkHic	Hardwood	Large	Low	Medium	High	Mill Creek	Passive	SMZ / Hydric, steep slopes
26BB	147.0	PopLob	Mixed	Medium	Medium	Medium	Medium	Mill Creek	Active	Structural diversity component
26BC	53.0	LobVir	Pine	Medium	Medium	Medium	Medium	Mill Creek	Restorative	EOD complex
27ANA	274.8	LobWOk	Mixed	Large	Medium	Medium	Medium	Mill Creek	Restorative	Forest reserve area and installation boundary
27ANB	47.8	PopLob	Mixed	Large	Medium	Medium	Medium	Mill Creek	Passive	Forest reserve area and installation boundary
27ANC	244.2	PopWOk	Hardwood	Large	Low	Low	Medium	Mill Creek	Active	Structural diversity component
27AND	28.3	PopSgm	Hardwood	Large	Low	Medium	Medium	Mill Creek	Passive	SMZ / Hydric area
27ASA	275.2	LobROk	Mixed	Large	Medium	Medium	Medium	Portobago Creek	Restorative	EOD complex
27BA	154.0	WOkPop	Hardwood	Large	Medium	Medium	Medium	Portobago Creek	Restorative	EOD complex
27BB	307.2	LobROk	Mixed	Large	Medium	Medium	Medium	Portobago Creek	Restorative	EOD complex
28AA	141.4	PopROk	Hardwood	Large	Medium	Medium	Medium	Portobago Creek	Restorative	EOD complex
28AB	244.1	LobWOk	Mixed	Medium	Medium	Medium	Medium	Portobago Creek	Restorative	EOD complex
28AC	181.6	PopROk	Hardwood	Medium	High	High	Low	Portobago Creek	Restorative	Installation boundary and sound buffer
28AD	31.2	PopSgm	Hardwood	Large	Medium	Medium	Medium	Portobago Creek	Passive	SMZ / Hydric
28BA	137.2	LobWOk	Mixed	Medium	Low	Medium	Medium	Portobago Creek	Restorative	EOD complex
28BB	513.0	WOkPop	Hardwood	Large	Low	Medium	High	Portobago Creek	Passive	Steep slopes
28BC	346.7	ROkCOk	Hardwood	Medium	High	Medium	Medium	Portobago Creek	Active	Oak management and sound buffer
28BD	218.3	LobPop	Mixed	Medium	Medium	Medium	Medium	Portobago Creek	Active	Structure diversity component
29A	57.8	LobWOk	Mixed	Medium	Low	Medium	Medium	White Lake	Passive	SMZ / Hydric and installation boundary
29B	128.7	WOkLob	Mixed	Large	Low	Medium	Medium	White Lake	Restorative	Eagle area
29C	87.4	ROkLob	Mixed	Large	Medium	Medium	Medium	White Lake	Active - long rotation	Training access and eagle area
29D	44.7	LobWOk	Mixed	Large	High	Medium	Medium	White Lake	Passive	Installation boundary
301A	35.4	VirWOk	Mixed	Medium	High	Medium	Medium	Gregg Pond	Passive	US-301 median
301B	77.0	VirWOk	Mixed	Medium	Medium	Medium	Medium	Mill Creek	Passive	US-301 median
301C	11.3	WOkVir	Mixed	Medium	Medium	Medium	Medium	Goldenvale Creek	Passive	US-301 median
30A	137.4	LobWOk	Mixed	Large	Medium	Medium	Medium	Elliots Pond	Active	Structure diversity component
30B	57.0	WOkROk	Hardwood	Large	Low	Medium	Medium	Elliots Pond	Active - long rotation	Plants, training, pine removal, oak mgmt
30C	344.6	Lob	Pine	Medium	High	Medium	Medium	Elliots Pond	Active	Pine diversity component
30D	100.7	PopMap	Hardwood	Large	Medium	Medium	Medium	Elliots Pond	Passive	SMZ / Hydric
30E	117.1	LobSgm	Mixed	Large	High	Medium	Medium	Elliots Pond	Active	Installation boundary
BSC	199.8	LobPop	Mixed	Large	Low	Low	Medium	Mill Creek	Active	Aesthetics - Boy Scout use area
CA01A	181.7	ROkPop	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	SMZ / Hydric and Forest reserve areas
CA01B	454.8	WOkROk	Hardwood	Medium	Medium	Medium	Medium	Mill Creek	Restorative	SMZ / Hydric, slopes, forest reserve area
CA01C	177.0	LobVir	Pine	Medium	High	Medium	Low	Mill Creek	Active	Pine diversity component
CA02A	34.7	ROkPop	Hardwood	Large	Medium	Medium	Medium	Mill Creek	Passive	Impact area - fuel reduction
CA02B	81.0	WOkPop	Hardwood	Large	Low	Medium	High	Mill Creek	Passive	SMZ / Hydric area
CA02C	101.4	ROkLob	Mixed	Large	Low	Low	Medium	Mill Creek	Active	Structural diversity component
CA03A	115.4	ROkLob	Mixed	Large	Low	Low	Low	Mill Creek	Active	Structural diversity component - frequent fire
CA04A	74.4	LobROk	Mixed	Large	High	Medium	Medium	Mill Creek	Restorative	Installation boundary
CA04B	71.8	LobWOk	Mixed	Medium	Medium	Medium	Medium	Mill Creek	Restorative	DPW and range buffer
CA04C	222.3	LobVir	Pine	Medium	Medium	Medium	Low	Mill Creek	Active	Pine diversity component
CA04D	91.6	ROkLob	Mixed	Large	Low	Medium	High	Mill Creek	Passive	SMZ / Hydric and metal contamination

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
CA05A	126.9	Lob	Pine	Medium	Medium	Low	Medium	Gregg Pond	Active	Pine diversity component
CA05B	154.2	LobROk	Mixed	Medium	Low	Medium	Medium	Gregg Pond	Active	Increase hardwood component
CA06A	123.1	WOkCOk	Hardwood	Large	Low	Low	High	Mill Creek	Passive	TES plants and metal contamination
CA06B	171.0	ROkLob	Mixed	Large	Low	Low	High	Mill Creek	Passive	TES plants and metal contamination
CA06C	82.6	Lob	Pine	Small	High	Medium	Low	Mill Creek	Active	Pine diversity component
CA07A	120.1	LobROk	Mixed	Large	Low	Low	Low	Elliots Pond	Passive	Pine-oak savanna
CA07B	303.8	ROkLob	Mixed	Large	Low	Medium	Medium	Elliots Pond	Active - short rotation	Desired training setting
CA07C	197.0	LobROk	Mixed	Medium	Low	Medium	Medium	Elliots Pond	Passive	Duded area
CA07D	124.0	LobROk	Mixed	Large	Low	Low	Low	Elliots Pond	Active	Pine-oak savanna
CA08A	143.8	LobWOk	Mixed	Large	Low	Low	Low	Smoots Run	Passive	Frequent burning, TES area
CA08B	102.8	WOkLob	Mixed	Large	Low	Low	Low	Smoots Run	Active	Frequent burning, TES area
CA09A	100.0	Lob	Pine	Medium	High	Medium	High	Battery Lane	Active	Installation boundary
CA09B	39.1	LobROk	Mixed	Large	Medium	Medium	Medium	Battery Lane	Passive	SMZ / Hydric area and installation boundary
CA09C	69.7	PopLob	Mixed	Large	Low	Medium	Low	Battery Lane	Active	Structural diversity component
CA10A	171.3	WOkVir	Mixed	Large	Low	Low	Medium	Battery Lane	Passive	Metal contamination and TES
CA10B	160.2	LobWOk	Mixed	Medium	Low	Low	Medium	Battery Lane	Active	Structural diversity component
CA11A	218.7	LobROk	Mixed	Medium	Medium	Medium	Medium	Smoots Run	Active	Structural diversity component
CA12A	121.2	WOkPop	Hardwood	Large	Medium	Medium	Medium	Smoots Run	Passive	SMZ / Hydric and eagle area
CA12B	97.3	Lob	Pine	Medium	Medium	Medium	Medium	Smoots Run	Restorative	Installation boundary
CA13A	207.7	LobWOk	Mixed	Large	Low	Low	Medium	Smoots Run	Restorative	Eagle area
CA13B	103.1	Lob	Pine	Medium	High	Medium	Low	Smoots Run	Active	Pine diversity area
CA13C	7.3	LobVir	Pine	Medium	High	Medium	Medium	Smoots Run	Restorative	Installation boundary
CA14A	120.3	LobWOk	Mixed	Medium	Low	Medium	Medium	Smoots Run	Active	Structural diversity component
CA14B	113.8	ROkWOk	Hardwood	Large	Low	Medium	Medium	Smoots Run	Active - long rotation	Structural diversity, oak mgmt, slopes
CA14C	163.6	ROkLob	Mixed	Large	Low	Low	Medium	Smoots Run	Passive	Fuel reduction - convoy live fire
CA14D	10.1	LobWOk	Mixed	Medium	High	Medium	Medium	Smoots Run	Restorative	Installation boundary
CA15A	252.2	LobROk	Mixed	Large	Low	Low	Low	White Lake	Active	Structural diversity component - savannah
CA15B	255.3	COkWOk	Hardwood	Medium	Low	Medium	Medium	White Lake	Active	Structural diversity component - oak mgmt
CA15C	14.2	LobVir	Pine	Medium	High	Medium	Medium	White Lake	Restorative	Installation boundary
CA16A	283.8	Lob	Pine	Medium	Low	Medium	Medium	White Lake	Active - short rotation	Pine diversity component
CA16B	237.6	WOkROk	Hardwood	Large	Low	Medium	Low	White Lake	Active	Structural diversity component - oak mgmt
CA16C	143.5	LobWOk	Mixed	Medium	Medium	Medium	Medium	White Lake	Active	Structural diversity component
CA16D	12.7	LobVir	Pine	Medium	High	Medium	High	White Lake	Restorative	Installation boundary
CA17A	171.4	LobROk	Mixed	Small	High	Medium	Low	White Lake	Active	Structural diversity component
CA17B	240.9	LobVir	Pine	Medium	Low	Medium	Low	White Lake	Active	Structural diversity component
CA18A	154.3	LobVir	Pine	Medium	High	Medium	Medium	White Lake	Restorative	Installation boundary
CA18B	199.1	LobROk	Mixed	Large	Low	Medium	Medium	White Lake	Active	Desired training setting
CA18C	61.5	ROkMap	Hardwood	Medium	Medium	Medium	Medium	White Lake	Passive	SMZ / Hydric and installation boundary
CA18D	47.7	VirLob	Mixed	Medium	High	Medium	Medium	White Lake	Restorative	Installation boundary
CA19A	211.2	LobROk	Mixed	Medium	Medium	Medium	Medium	Portobago Creek	Active	Structural diversity component
CA19B	42.3	LobVir	Pine	Large	Medium	Medium	Medium	Portobago Creek	Restorative	Installation boundary
CA20A	60.1	LobPop	Mixed	Medium	Medium	Medium	Medium	Portobago Creek	Active	Structural diversity component

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
CA20B	131.5	WOkPop	Hardwood	Large	Low	Medium	Low	Portobago Creek	Restorative	Eagle area
CA21A	141.3	LobROk	Mixed	Medium	Low	Medium	Medium	Portobago Creek	Active	Structural diversity component
CA21B	200.5	WOkPop	Hardwood	Medium	Low	Low	Medium	Portobago Creek	Active	Structural diversity component
CA21C	270.6	PopROk	Hardwood	Large	Low	Low	Medium	Portobago Creek	Passive	Training access and eagle area
CA21D	142.3	PopROk	Hardwood	Large	Medium	Medium	Medium	Portobago Creek	Passive	SMZ / Hydric and steep slopes
CA22A	137.0	WOkPop	Hardwood	Medium	Low	Low	High	Portobago Creek	Passive	SMZ / Hydric and steep slopes
CA22B	124.7	LobROk	Mixed	Medium	Low	Low	Low	Portobago Creek	Active	Structural diversity component - savannah
CA23A	132.4	LobVir	Pine	Medium	Low	Medium	Medium	Mill Creek	Active	Pine diversity component
CA23B	102.7	WOkPop	Hardwood	Large	Low	Medium	Medium	Mill Creek	Active - UEA	SMZ / Hydric and forest reserve components
CA24A	97.4	Lob	Pine	Medium	Low	Low	Low	Mill Creek	Active	Structural diversity component
CA24B	50.9	WOkPop	Hardwood	Large	Low	Low	Medium	Mill Creek	Active - UEA	Structural diversity component - SMZ area
CA24C	48.1	ROkWOk	Hardwood	Large	Low	Medium	Medium	Mill Creek	Active	Structural diversity component - oak mgmt
CA25A	78.0	ROkPop	Hardwood	Large	Low	Low	High	Mill Creek	Passive	SMZ / Hydric area and steep slopes
CA25B	33.3	LobPop	Mixed	Medium	Low	Medium	Low	Mill Creek	Active	Structural diversity component
CA25C	57.0	Lob	Pine	Large	Low	Low	Low	Mill Creek	Active	Structural diversity component - savannah
CA25D	137.5	PopWOk	Hardwood	Large	Low	Medium	High	Mill Creek	Passive	SMZ / Hydric and steep slopes
EPIAA	71.0	ROkLob	Mixed	Medium	Low	Medium	Medium	Elliots Pond	Active	Desired training setting - TCA
GPIAA	68.4	LobROk	Mixed	Medium	High	Medium	Medium	Gregg Pond	Active	Installation boundary
GPIAB	90.1	Lob	Pine	Medium	Medium	Medium	Medium	Gregg Pond	Active	Installation boundary
LR A	70.8	SgmPop	Hardwood	Small	Low	Low	Low	Goldenvale Creek	Active	Laser range - reduce forest cover in drains
LZ A	145.3	None	None	Regeneration	Low	Low	Low	Meadows Creek	Restorative	Landing zone cleared areas
LZ B	120.1	None	None	Regeneration	Low	Low	Low	Mount Creek	Restorative	Landing zone cleared areas
MCIAA	395.2	ROkPop	Hardwood	Large	High	Medium	Medium	Mill Creek	Restorative	Installation buffer
MCIAB	328.3	ROkPop	Hardwood	Large	Low	Medium	Medium	Mill Creek	Passive	Forest reserve area - SMZ and eagles
MCIAC	130.0	ROkWOk	Hardwood	Large	Low	Medium	High	Mill Creek	Active	Structural diversity component - oak mgmt
MCIAD	341.4	ROkPop	Hardwood	Large	Low	Medium	Medium	Mill Creek	Active	Structural diversity component
MCIAE	311.5	ROkLob	Mixed	Medium	Low	Low	Medium	Mill Creek	Active	Range buffers - fuel reduction
MCIAF	651.9	LobROk	Mixed	Large	Low	High	Medium	Mill Creek	Passive	Forest reserve area - metal contamination
MCIAG	719.8	WOkLob	Mixed	Large	Low	Medium	Medium	Mill Creek	Active	Structural diversity component
MCIAH	518.9	ROkWOk	Hardwood	Medium	Low	Medium	Low	Mill Creek	Passive	Forest reserve area - metal contamination
MCIAI	1479.9	ROkLob	Mixed	Large	Low	Medium	Low	Mill Creek	Passive	Impact area - fuel reduction
MCIAJ	459.8	LobPop	Mixed	Medium	Low	Medium	Medium	Mill Creek	Active	Structural diversity component
MCIAK	167.8	LobROk	Mixed	Large	Low	Low	Medium	Mill Creek	Active	Structural diversity component
MCIAL	236.4	LobVir	Mixed	Medium	Low	Low	Medium	Mill Creek	Active	Pine diversity area - shortleaf pine
MCIAM	221.1	Lob	Pine	Small	High	Medium	Low	Mill Creek	Active	Pine diversity area
PCIAA	671.4	WOkLob	Mixed	Large	Low	Low	Low	Portobago Creek	Active	Structural diversity component - burning
PCIAB	447.7	ROkVir	Mixed	Medium	Medium	Medium	Medium	Portobago Creek	Passive	Forest reserve area - TES plants
PCIAC	74.0	ROkMap	Hardwood	Large	Medium	Medium	Medium	Portobago Creek	Passive	SMZ / Hydric
PCIAD	204.7	LobROk	Mixed	Large	Low	Low	Medium	Portobago Creek	Passive	Forest reserve area
SRIAA	553.6	LobWOk	Mixed	Medium	Medium	Medium	Low	Smoots Run	Active	Structural diversity component
SRIAB	338.0	LobROk	Mixed	Medium	Low	Low	Medium	Smoots Run	Active	Structural diversity component
SRIAC	1889.5	WOkLob	Mixed	Large	Low	Low	Low	Smoots Run	Passive	Impact area - fuel reduction

Table F-3. Desired Future Conditions for each Fort A.P. Hill Forest Management Unit (c.2008)

FMU	Acres	Desired Future Conditions							Management Type	Reason for this Management Type
		Forest Community	Forest Type	Size Class	Understory	Mid-Story	Overstory	Sub-Watershed		
WLIAA	319.3	ROkVir	Mixed	Medium	High	Medium	Medium	White Lake	Active	Installation boundary
WLIAB	961.9	ROkLob	Mixed	Large	Low	Medium	Medium	White Lake	Passive	Impact area fuel reduction
WLIAC	1358.9	LobWOk	Mixed	Large	Low	Medium	Low	White Lake	Active - short rotation	Desired training setting - fuel reduction
WLIAD	663.7	ROkPop	Hardwood	Large	Low	Medium	High	White Lake	Active	Structural diversity, SMZ / Hydric area
WR A	140.1	Lob	Pine	Medium	Medium	Medium	Medium	Goldenvale Creek	Active	Pine diversity component - reduce Vir
WR B	99.9	WOkROk	Hardwood	Large	Low	Low	High	Goldenvale Creek	Active - long rotation	Aesthetics - nature trail
WR C	12.4	PopWOk	Hardwood	Large	Low	Low	High	Goldenvale Creek	Restorative	Aesthetics - around church
WR D	20.2	ROkWOk	Hardwood	Large	Medium	Medium	Medium	Goldenvale Creek	Passive	SMZ / Hydric area
WR E	109.9	WOkROk	Hardwood	Large	Low	Low	High	Goldenvale Creek	Passive	Forest reserve area - historic district

APPENDIX G – FORT A.P. HILL
HUNTING, FISHING, AND TRAPPING REGULATION

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Department of the Army
Installation Management Command
Headquarters, United States Army Garrison
18436 4th Street, Bldg 112
Fort A.P. Hill, Virginia 22427-3114
1 September 2015

Directorate of Public Works

Hunting, Trapping & Fishing

Expires: 31 August 2016

History. This Regulation incorporates changes made on a yearly basis for use on Fort A.P. Hill.

Summary. This Regulation describes the policies and procedures that govern hunting, trapping and fishing on Fort A.P. Hill.

Applicability. This Regulation applies to all individuals hunting, trapping and fishing within the boundaries of Fort A.P. Hill. All individuals entering Fort A.P. Hill under authority of this regulation are also subject to local, state, and federal laws and regulations.

Supplementation. Supplementation of the regulation is prohibited without prior approval from the Directorate of Public Works, US Army Garrison Fort A.P. Hill, Virginia 22427-3123.

Suggested Improvements. The proponent of this Regulation is the Directorate of Public Works, Environmental and Natural Resources Division (DPW/ENRD). Users are invited to send comments/suggested improvements on DA Form 2028, (Recommended Changes to Publications and Blank Forms), to Directorate Public Works, Environmental and Natural Resources Division, Fish and Wildlife Branch, 19952 N. Range Road, Fort A.P. Hill, Virginia 22427-3123

***This Regulation supersedes APH Reg. 200-10, dated 1 September 2014**.

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HUNTING

1. General Information and Policy.

a. This regulation sets forth policies, laws, restrictions and procedures for all hunting activities on Fort A.P. Hill (FAPH). It applies to all individuals that hunt on the Installation. FAPH operates a hunting program in the areas used for military training on the Installation. This program is intended to offer public recreational hunting and opportunities to assist in wildlife management. Hunting on FAPH is a privilege, not a right. **New regulations for the 2015-16 seasons are shown in bold.**

b. All recreational activities on FAPH are authorized and controlled by the Garrison Commander in accordance with the applicable Federal, State, Caroline County Laws and Department of the Army Regulations. Minimum restrictions on all recreational activities are established to ensure safety, security, protection of property, and efficient accomplishment of FAPH missions. Federal, State, and Caroline County governments have concurrent legislative jurisdiction over most of FAPH.

c. There are no guarantees of a place to hunt on FAPH. Areas are open or closed to hunting based upon scheduled military training, safety, or biological management objectives.

d. By entering the Installation, every individual consents to the search of their person and vehicles by law enforcement personnel and the confiscation of all evidence of unauthorized activities.

e. All observed violations of Federal, State, Caroline County, or FAPH regulations or laws must be reported to the FAPH Police Desk (DES) at (804) 633-8888 or for non-urgent calls call (804) 633-8454. DES will support the enforcement of applicable laws and regulations and protection of FAPH's natural resources in accordance with the Sikes Act as Amended (2013) and Department of Defense Instruction (DODI) #5525.17 (2013).

f. In case of emergency call (804) 633-8911. Accidents and lost persons must be immediately reported to FAPH Police Desk (804) 633-8888, Range Operations (804) 633-8224 and the Fish and Wildlife Branch (804) 633-8984.

g. Unless otherwise addressed in this regulation, hunting on FAPH will be in accordance with Virginia State laws, applicable federal laws and supplemental orders issued by the Garrison Commander. Any supplemental order will be posted at Bldg. P00314 (Game Check Station), Bldg. 1253 (Range Operations), Bldg. 308 (Fish and Wildlife Branch), and on the iSportsman website.

h. This policy does not authorize or regulate motor vehicle operation on FAPH. APH Regulation 190-5 outlines policy for operating vehicles and should be reviewed prior arriving at FAPH.

i. This policy does not authorize or regulate the possession or use of privately owned weapons on FAPH. Command Policy Letter (CPL) 19 and APH Regulation 190-11 outline the policy for possession and use of privately owned weapons and will be reviewed prior to arrival at FAPH.

2. What is Needed to Hunt at Fort A.P. Hill (FAPH).

a. To be eligible to participate in hunting on FAPH you must possess, or have accomplished, the following:

(1) Step 1 – Must possess a valid Hunter Safety Education Certificate. See 2.b. below.

(2) Step 2 – Must possess all required state and federal hunting licenses, stamps, etc. for the species that will be hunted.

(3) Step 3 – To gain access to FAPH, a criminal history check is required. See 2.c. below. These can be completed upon entrance to the Garrison at the Visitor Control Center (VCC). Please call the VCC at 804-633-8585 to confirm their hours of operation. Hunters may also visit https://faph.isportsman.net/ and complete the background information sheet and email the form through your private email account to the VCC. There is no fee associated with the background check.

(4) Step 4 – The serial number, make, and model for all weapons (including bows and crossbows) that will be used while hunting at FAPH must be recorded at the VCC. Write down the information that is to be recorded and take that to the VCC. Do not take the weapons into the VCC. Steps 3 and 4 may be completed at the same time.

(5) Step 5 – New hunters on FAPH must view the FAPH Safety Orientation slide presentation located on the FAPH iSportsman website.

(6) Step 6 – Create a user profile in the iSportsman system and sign a General Release Statement and purchase the FAPH Hunting Permit.

(7) Step 7 – To hunt in the 31 Controlled Access Areas (CA) south of Rt. 301, a hunter must attend a CA Area Orientation and Safety Brief. Briefing times and information will be available by calling 804-633-8984. At the end of the briefing the hunter must pass an exam with a minimum score of 80% correct.

b. **Hunter Safety Certificate Requirement**. Hunters must have a Virginia State Hunter Safety Education Certificate or a state Hunter Safety Education Certificate from

any state and must acknowledge having such in order to purchase a FAPH Hunting Permit. FAPH will honor Virginia Apprentice licenses for new hunters which temporarily negates the requirement of the Hunter Education Safety Certificate. Other hunter education courses approved in writing by the Virginia Department of Game and Inland Fisheries (VDGIF) may be acceptable. Children younger than 12 will be allowed to hunt without the certificate but must remain within arm's reach of a parent/guardian. Individuals possessing or purchasing a FAPH senior citizen or disabled lifetime permit are also required to present a Hunter Safety Education Certificate.

c. **Force Protection Requirement**. In accordance with Army Regulation 190-13, "The Army Physical Security Program" regarding un-escorted access to military installations, a Criminal History Check must be completed before being granted access to FAPH. This Criminal History Check can be done at the VCC during normal business hours, or pre-filing your data by email at https://faph.isportsman.net/ .

d. **Fort A.P. Hill Hunting Permit**. Prior to purchasing a FAPH Hunting Permit, a hunter must possess a Hunter Safety Education Certificate (See 2.b.), complete their weapons registration, pass a current Criminal History Check, possess a current Virginia State or Caroline County Hunting License (resident or nonresident as applicable), and complete the FAPH hunting application and General Release Statement through the iSportsman system. A qualified guardian is required to sign a General Release Statement for children 17 years of age or under. These children must be accompanied by a parent or legal guardian. All hunters new to FAPH (a new hunter is an individual that has not hunted on FAPH in the past two years) are required to review the FAPH hunting safety program slide presentation before purchasing a FAPH Hunting Permit available on the FAPH iSportsman website.

e. **Permit Fees:** The season runs from 1 Sep – 31 Aug.

General hunting permit (16-64 years old).....$50.00/season
Youth/Junior hunting permit (15 years old and below)……..Free
Disabled hunting permit……Free
(Must possess a Virginia Resident Disabled Hunting License or a Virginia Nonresident Disabled License)
65+ years old prior to 1 September 2015 Free
Turned 65 years old from 1Sep2015 to date of purchase.$20/season
3 day hunting.....$30.00
CA Hunter permit (must have attended 2 CA lectures and passed exams)..... Free
Combination permit (General hunting and fishing).....$60.00/season

3. Telephone Numbers and Hours of Operation for the 2015/2016 Hunting Season

BUILDING	SERVICES AND PHONE NUMBERS
Fish and Wildlife Branch Building 308 Anderson Camp	**Recording for open TA's, CA's, and General information:** 844-326-3113 **Game Check Station & Fish and Wildlife Branch:** (804) 633-8984/8750
Directorate of Emergency Services (DES) Provost Marshal Office Building #156	**FAPH Police Desk:** (804) 633-8888 **Emergency** – 911 When dispatcher answers, notify that the emergency is located on FAPH. Dispatch Center will transfer call to the FAPH Police Desk. **For suspected game violations:** 1st (804) 633-8434 Game Wardens 2nd (804) 387-4972 cell 3rd (804) 363-9271 cell 4th (804) 633-8888 5th (804) 633-8454 (Voicemail) (804) 633-8131 anonymous Game Warden tip line
Call-In Number for Hunting Area Reservations (Allows you to reserve an area one day in advance)	(844)-326-3113 (iSportsman line)
Visitor Control Center	Annual Criminal Background Check and Weapons Serial Number Registration. 804-633-8585.

4. Fort A.P. Hill 2015/2016 hunting seasons and bag limits. FAPH hunting seasons and bag limits are listed in Appendix A.

5. Check-In/Check-Out Procedures.

Table 6-1

Checking In to Hunt	Checking Out From Hunting
During the Fall and Winter hunting seasons, hunters may not check **in** to their areas prior to 0430 in the iSportsman system. Hunters will not be permitted to enter FAPH until 0430. Those staying in recreational lodging are not permitted to proceed to training areas or range complex prior to 0430. Anyone	The following are the times that all hunters must be checked **out** from hunting through the iSportsman system and off the installation unless they are checking game. Those hunters staying in recreational lodging must be clear of their hunting area, roads and trails that are not directly associated to their lodging. The

found on the roads/trails prior to 0430 will have their privileges suspended and asked to leave the installation immediately.	end of legal shooting time is ½ hour after sunset (except for some migratory bird season). On days that FAPH has ½ day hunting the end of legal shooting time is 1200. **26 SEP – 2015** **30 SEP - 2 OCT – 1600** **3-17 OCT – 2030** **19 OCT - 31 OCT – 2015** **2-7 NOV – 1915** **9-26 NOV – 1900** **Thanksgiving 26 NOV – 1200** **27 Nov-23 DEC – 1900** **Christmas Eve 24 DEC – 1200** **Christmas Day 25 DEC – Closed** **26 DEC – 28 FEB - 1900** **Closed Sundays**
During the Spring hunting seasons, hunters may not check into their areas prior to 0400 in the iSportsman system. Hunters will not be permitted to enter FAPH until 0400. Those staying in recreational lodging are not permitted to proceed to training areas or range complex prior to 0400. Anyone found on the roads/trails prior to 0400 will have their privileges suspended and asked to leave the installation immediately.	The following are the times that all hunters must be checked out from hunting through the iSportsman system and off the installation unless they are checking game. Those hunters staying in recreational lodging must be clear of their hunting area, roads and trails that are not directly associated to their lodging. The end of legal shooting time during this Spring season is 1200. **29 MAR-15 MAY – 1330** **Closed Sundays**

a. **Procedures**. To be assigned an area to hunt, hunters must check in to a hunting area using the FAPH iSportsman system either by phone, computer, smartphone, or at the iSportsman kiosk located at the VCC. A seasonal parking pass is issued at the same time when a hunter purchases their hunting permit. The hunting permit must be printed off and be carried on the hunters' person, and the parking permit, which must be displayed face up on the left side of the dashboard of the hunters' vehicle so it is clearly visible. The parking permit must be clearly displayed for each hunter in a vehicle. Vehicles not displaying parking permits will be towed at the owner's expense and their hunting privileges will be suspended. When finished hunting, every hunter must check out from their hunting area using the iSportsman system. All game harvested must be recorded in the system as well, and if a deer, bear or fall turkey was harvested it must be transported to the Game Check Station located at Anderson Camp. Failure to leave and check out from the hunting area by the designated Game Check Station closing time will result in an automatic hold placed on all hunting privileges, and a search for the hunter based on the presumption that the hunter is either lost or injured. Hunters must be out of their assigned areas, checked out through the iSportsman system, and off of

FAPH property prior to the **Checking Out From Hunting (Table 6-1)** time for that date. If a hunter has harvested a deer they must return to the Game Check Station by the assigned **Check Out From Hunting (Table 6-1)** time. Those hunters staying in recreational lodging must be clear of their hunting areas, roads and trails that are not directly associated with returning to their lodging. If a hunter is tracking a deer and on FAPH past the specified return time for that day they must have checked out of to the iSportsman system and must have received permission and are coordinating with the Range Operations Fire Desk (see 5.e. below).

b. **Hunting Areas**. Hunting areas are designated daily according to military needs. Hunters are restricted to hunting only in their assigned area, but will be permitted to change areas when space is available by checking out using the iSportsman system by phone, internet or kiosk. During the fall/winter hunting seasons, the maximum approximate hunter density will be 1 daily hunting permit per 75 acres of land available for hunting on a given day. During the spring gobbler season, approximately 1 daily permit per 225 acres of available hunting land will be issued. Hunters may only check in to one area at a time, no exceptions.

c. **Open Area Information**. Recorded phone line (844-326-3113) will be updated each day by 1900 (7pm) to give the open hunting areas for the next hunting day. Open hunting areas are also posted on the FAPH iSportsman website.

d. **Reservations**. Hunters may reserve an open hunting area by telephone 844-326-3113, or on the FAPH iSportsman website, beginning at 1900 (7pm) and ending at 2400 (12am) the day prior to the hunting day. An exception to this is that Monday reservations can be made Sunday evening at 1900 (7pm). Reservations will be held only until 0600 (6am) the day of the hunt. The calling hunter may make a reservation for themselves and one other hunter.

e. **Hunter and Harvest Check-in**. All game animals taken on this Installation, to include small game, waterfowl, and furbearers, must be reported in the iSportsman system. Upon killing a deer, bear, or turkey, the hunter must immediately notch the appropriate tab on their Virginia State Big Game Hunting License prior to moving the animal from the place of kill. That hunter must then take the game to the FAPH Game Check Station where an official Virginia Game Check Card will be issued. Unless directed to do so, no deer are to be checked in using the Virginia Department of Game and Inland Fisheries telephone or internet checking system. The removal of unreported game from the Installation will result in forfeiture of Installation access privileges. Hunters must make every effort to trail and recover wounded game. Hunters may not, however, violate checking out of the iSportsman system by the assigned time (pages 6 & 7). To be allowed to stay in an area after the assigned return time to stay and track a wounded deer, the hunter must coordinate with the Range Operations Fire Desk, (804)-633-8224. Range Operations may grant or deny permission to stay in the training area or controlled access area to track the animal. If a hunter is granted permission to stay in the area by Range Operations the hunter shall call the Fish and Wildlife Branch, (804)-633-8984, to inform the biologist on duty that they have checked out to the

iSportsman system and have coordinated with Range Operations to track. If the hunter is successful in recovery of the animal the hunter must bring the deer to the Game Checking Station and complete the late deer check in procedures as directed at the station. If wounded game goes off of FAPH, it is the responsibility of the hunter to obtain permission from the private landowner to enter the privately owned land. If a hunter fails to check out in the iSportsman system before the assigned time, the hunter's account will be place on automatic administrative hold. The user will be unable to hunt on FAPH until the matter is resolved.

f. **Observers**. A non-hunting observer may accompany a licensed hunter. To be allowed access to the areas, an observer must obey all blaze orange requirements, cannot carry any weapons and must sign the "General Release Statement." Observers must check in and out of areas using the iSportsman system, just as the licensed hunter.

g. **Youth Hunters**. Any, civilian or family member under the age of 18 is prohibited from the use of firearms, unless accompanied and supervised by a parent or legal guardian (FAPH 190-11). An authorized adult, 21 years of age or older, can escort no more than two youth hunters (under the age of 18) or non-hunting observers. The underage hunters must stay within sight and voice contact and no more than 100 yards away from the adult escort. During spring gobbler season underage hunters must stay within 10 yards of the adult escort. Children younger than 12 must remain within arm's reach of a parent/guardian.

6. Prohibited Activities and Restrictions. The following include regulations that are prohibited on FAPH that may differ from state and county laws or ordinances. The list also includes violations that are state laws but are included for emphasis.

a. **Buckshot**. Buckshot may not be used to hunt any game and may not be possessed on one's person or in one's vehicle while hunting at FAPH.

b. **Weapons in Vehicles**. Weapons must be encased or broken down and unloaded while in a vehicle. Weapons and ammunition must be separated during transport.

c. **Drive Hunting**. Drive hunting is strictly prohibited**.** Drive hunting is defined as an organized sweep by one or more moving people designed to push or drive deer to one or more hunters.

d. **Shooting From Vehicle**. Shooting an animal from a vehicle is prohibited.

e. **Legal Deer Weapons.** Deer will be hunted only with archery tackle, shotgun loaded with slugs, and muzzle loading rifles .45 caliber or larger.

f. **Deer Bag Limit Hunter Restriction**. A hunter who has already met the daily or season bag limit on deer may continue to hunt for other in-season game but may not carry slugs, broad-heads, or muzzle loading rifles.

g. **Shooting Across Roads or Trails**. Firing across a road or trail is prohibited.

h. **Spotlighting**. Casting a light to find game while in the possession of a rifle, shotgun, pistol, or archery tackle is prohibited at any time.

i. **Discharging a Firearm**. Discharging a firearm for purposes other than hunting is prohibited.

j. **Dogs and Deer**. It is unlawful to hunt or track deer with dogs on FAPH. Any hunter or member of a party of hunters who kills a deer while hunting with dogs will be subject to the loss of FAPH hunting privileges. Shooting a deer being pursued by dogs is prohibited. Shooting dogs is prohibited.

k. **Trespassing**. Anyone found in a Permanent Restricted Area or in any other area (Training Area, Controlled Access area) without approval will have their FAPH hunting privileges revoked. All equipment (weapons, vehicles, etc.) in the individual's possession may be impounded by FAPH Game Wardens. Signing out for one area and hunting or entering a different area is prohibited and will result in loss of hunting privileges. Additionally, personnel found poaching/trespassing will be subject to prosecution and/or administrative action. Personnel reporting violations should contact the Game Wardens at (804) 633-8434 or Police Desk (804) 633-8888.

l. **Road Hunting**. Hunters are to proceed directly to and from their assigned hunting area by the most direct route. Driving FAPH roads and trails to observe wildlife or for any other purpose other than to reach or leave the assigned hunting area is prohibited. If persons are observed driving in a manner that appears they are searching for wildlife, it will be assumed that they are hunting from that vehicle and they may be stopped and searched.

m. **Accessing Hunting Areas, Legal Hunt Hours**. Hunters will not be permitted to enter FAPH prior to 0430 in the Fall seasons and 0400 in the Spring. Hunters staying in recreational lodging will not be permitted to proceed to their assigned hunting areas prior to 0430 in Fall seasons and 0400 during the Spring season. Anyone found to be on the roads/trail system prior to those times will have their privileges suspended and asked to leave the installation immediately. Hunting will not commence prior to one-half hour before sunrise and will end not later than one-half hour after sunset. WEAPONS WILL NOT BE LOADED OUTSIDE OF HUNTING HOURS. Some migratory bird and turkey seasons have shorter hunt day lengths.

n. **Deer Processing Restrictions**. Processing/skinning of any wildlife is prohibited at Champs Camp RV Park and/or any FAPH lodging facilities. If found to have

processed/skinned game at one of these areas, personnel will lose their FAPH hunting privileges, and lodging privileges.

o. **Baiting and Non-Game Species**. Feeding or baiting of any wildlife or taking of any species not addressed in these regulations is prohibited.

p. **Alcohol and Drugs**. Any hunter that uses or possesses alcohol or illegal drugs in a hunting area is subject to loss of hunting privileges and prosecution under Federal and/or state law. This prohibition extends to carrying alcohol or illegal drugs in a vehicle while checked out to hunt. NOTE: If alcohol or the odor of alcohol is detected by members of law enforcement personnel, the hunter will be denied hunting privileges, and may be excluded from the installation, escorted off FAPH, have hunting privileges revoked, be fined, be confined, and be issued applicable citations and/or any combination of the penalties listed or allowed by law.

q. **Government Property**. Picking up, touching or taking Government equipment, ordnance, munitions or parts of the same is prohibited. Defacing, climbing on, or disturbing any part of a building, range structure, sign, equipment or property found on FAPH is also prohibited.

r. **Harassment and Hunter Conduct**. Harassment of government employees or contractors involved in natural resources management or check station duties is prohibited and will result in loss of hunting privileges. The use of inappropriate, crude, offensive or threatening language by hunters around the Game Check Station or directed at others at any location on FAPH, is prohibited and will result in revocation of privileges.

s. **Interfering with Hunters**. Intentionally interfering with the lawful pursuit of taking of wildlife or disturbing any wildlife for the purpose of disrupting a hunt is prohibited.

t. **Party Hunting**. “Party Hunting” is prohibited. Party hunting is defined as one person killing a deer, bear or turkey and having another member notch their Big Game License and check in the animal for them. This also applies to small game and migratory birds.

u. **Artifacts**. Unauthorized excavation or digging is prohibited. The collection of any artifact (such as Civil War artifacts, old bottles, coins, etc.), disturbance of any feature related to past human activity, and the collection of paleontological specimens on FAPH is prohibited. The use of metal detectors on FAPH is strictly prohibited. Violators will be prosecuted under both the civil and criminal provisions of the Archeological Resources Protection Act, 16 USC Sections 470ee-470ff.

v. **Littering**. Littering or disposing of refuse except in receptacles provided for that purpose is prohibited.

w. **Checking Out and Not Hunting**. Hunters who falsely check out to hunt an area and do not go hunting, or allow others to check them into areas for the purpose of "locking up" openings to keep others out will be flagged as doing so in the iSportsman system and have their privileges placed on administrative hold.

x. **Photography**. Do not photograph installation facilities, training equipment, or troops while on FAPH.

y. **FAPH Access Under False Pretenses.** If a person falsely uses a hunting permit to gain access to FAPH and is not on the Garrison to hunt, that person may be subject to the loss of all FAPH privileges.

7. Safety.

a. **Blaze Orange. Violations of the following blaze orange requirements may result in immediate and permanent loss of FAPH hunting privileges. Removing blaze orange once a hunter reaches a stand is a violation of this regulation. If hunters observe others not following these blaze orange requirements, they are to immediately call 804-633-8888 or 804-633-8984 and report, in detail, this severe violation.** Every hunter or person accompanying a hunter on FAPH beginning with the firearms deer seasons (including muzzle loader season), will wear a blaze orange hat and outer body clothing with at least two square feet of blaze orange visible above the waist and visible from 360 degrees. Camouflage blaze orange body clothing is acceptable. Portable pop-up style blinds must also be marked with two square feet of blaze orange during the firearms deer seasons. Blaze orange must be clearly visible from all sides, 360 degrees, and must not be faded, or covered. Hats may have a bill or brim color or design other than solid blaze orange. A logo, which does not detract from visibility, may be worn on a blaze orange hat. The blaze orange requirement during the deer firearms seasons also applies to bow hunters hunting in archery only areas. Waterfowl hunters must wear blaze orange while walking to and from their hunting areas during the general firearms season, but may wear camouflage while sitting in a blind or boat. After the deer general firearms season all small game hunters must still comply with the blaze orange requirement.

b. **No Hunting Safety Zones**. Hunting is not permitted within 200 meters (219 yards) of the fuel storage area, built-up areas, dwellings or other occupiable structures. During all hunting seasons, hunting is prohibited within 50 meters (55 yards) of all perimeter (boundary), Training Area (TA) and Controlled Access (CA) area roads (paved or gravel). Roads that are interior to the assigned hunting area are not subject to this restriction. The blast zone arc limits for the Ammunition Supply Point and the Ammo Holding Area are marked with signage. Hunters are not allowed inside of the blast arcs.

c. **Keeping a Safe Distance**. Hunters need to be mindful of each other's presence in the woods. Ethical hunters, when realizing the presence of another hunter, will not enter, and will depart the area immediately to avoid interference with the hunter who is

already in position to hunt. This separation distance should be at least 200 meters (219 yards). During the spring gobbler season, early archery and squirrel seasons, camouflaged hunters can be in close proximity and not realize it. Squirrel season presents the unique potential hazard of having a hunter shoot into a tree where a motionless archery hunter might be sitting. Extra care must be exercised to be sure of your target and what is beyond.

d. **Evacuate Hunting Areas**. Hunters must immediately leave their assigned hunting area and return to their vehicle if:

(1) There is contact with military personnel engaged in military training within the assigned hunting area. This means that either military personnel or the hunters are in the wrong area. Contact Fish and Wildlife Branch personnel (804-633-8984) or Range Operations (804-633-8224) to correct the problem. The hunter will either be allowed back into the area once it is clear, or they will be assigned to another area.

(2) There is a notice broadcast from loud speakers situated at various locations over the Installation. This system may signal an emergency or unsafe condition and may instruct all personnel to leave the areas and return to their vehicle or safe area.

(3) Directed by Range Operations.

(4) Notified by the FAPH iSportsman system by automated call, text message, or email to evacuate the area.

e. **Safety Equipment**. Cell phone, flashlight, and whistle are strongly encouraged to be carried at all times. It is advised that all hunters carry cell phones to call for assistance and to download FAPH's important phone numbers such as Range Operations (804) 633-8224, Fish and Wildlife Branch (804) 633-8984, Game Warden (804) 633-8434, and FAPH Police Desk (DES) (804) 633-8911 into their cell phones.

f. **Treestand Safety**. FAPH hunters may use treestands at their own risk. Only portable treestands may be used. Never climb into a permanent wooden stand. The government is neither responsible for accidents and injuries that may occur nor liable for any loss or damage that occurs to stands left unattended. Use only professionally manufactured stands such as those that are certified by Treestand Manufacturers Association (TMA). Follow the manufacturer's instructions for their assembly and safe use. Inspect treestands prior to each use to ensure that there are no damaged or loose parts. Do not climb with anything in hand. Use an equipment haul line to raise and lower your unloaded gun, archery tackle, or other equipment. Always wear and properly use a Fall Arrest System/Full Body Harness that meets TMA type standards. Always use a harness that distributes weight through shoulders, chest, waist, and legs and is equipped with a safety release mechanism.

g. **Unexploded Ordnance**. All hunting areas are utilized for military training and dangers inherent to such training are present. It is possible to find unexploded

ordnance (UXO) anywhere. Do not touch or disturb the UXO. If a UXO is found, mark the area, not the UXO and report it immediately to Range Operations at (804) 633-8224.

h. **Closed and Off Limits Areas**. Never, for any reason, enter a closed TA or CA area, explosive impact area, or any other area shaded off limits on the Hunting Area Map. It is imperative that hunters know their location at all times. Never cross a boundary road, cross a wire fence, or walk, drive, or bypass around a closed gate.

8. Violations.

a. Each hunter is responsible for knowing and adhering to Federal, State, Caroline County, and FAPH hunting laws and/or regulations. Anyone violating a posted sign, bypassing a barricade, entering into a Permanent Restricted Area, failing to comply with any hunting laws and/or regulations, or exhibiting any conduct hazardous to life and safety may be excluded from the installation, have their hunting privileges revoke, fined, prosecuted, issued applicable citations and/or any combination of the sanctions listed, as allowed by law. DOD civilian employees of FAPH may also receive administrative actions for violations of these regulations.

b. All evidence of unauthorized hunting or other forms of recreational activities to include but not limited to, suspected unlawfully killed or caught game, unauthorized weapons, snares, traps, or explosives will be confiscated and may be released to the VDGIF with Report of Offense. A receipt of the confiscated items will be furnished to the hunter from whom the items were seized. Violations of applicable Federal or State laws and/or regulations may result in criminal prosecution. Military personnel are also subject to the Uniform Code of Military Justice.

c. Immediate suspension: Any hunter cited with a violation of any provision of the environmental conservation and/or the fish and game laws of the State of Virginia, applicable Federal Laws, Army and/or FAPH Regulations, by Virginia State Conservation Officers or DES staff members shall immediately surrender his/her permit to the citing official.

9. Weapons Regulation. This regulation describes procedures and restrictions on the use of firearms for recreational hunting only. APH Regulation 190-11 and Commander's Policy Letter #19 determine the proper protocol regarding the transport and storage of firearms. Unless specifically authorized by the Garrison Commander, the possession and/or use of firearms on the installation are prohibited. This policy will be strictly enforced.

a. **Authorized Weapons**. Shotguns, muzzleloaders, rim fire rifles, air rifles, archery tackle, and crossbows are weapons authorized for hunting on FAPH. Air rifles, .22 and .17 rim fire are only legal for small game hunting. Handguns cannot be concealed regardless of permits. Pump and semi-automatic shotguns must be plugged so the magazine and chamber combined do not accommodate more than 3 shells.

b. **Transporting Weapons**. All weapons shall be unloaded and inaccessible to the driver and passengers while transported within the boundaries of FAPH in accordance with APH Regulation 190-11. Firearms are considered unloaded when there are no shells in the chamber or magazine. Muzzleloaders are considered unloaded when the percussion cap or primer has been removed from the nipple or breach plug or when all powder has been removed from the flash pan. During transportation all weapons shall be CASED, DISASSEMBLED, OR LOCKED IN THE TRUNK, CAMPER, OR TOOL BOX.

c. **Registering Weapons**. Hunters must register any weapons that will be transported on FAPH. Per AR 190-11, the registration of privately owned firearms by persons described below is prohibited:

(1) Any person convicted of a felony (Gun Control Act of 1968 (Title 18, United States Code Section 921 et seq. (18 USC 921 et seq.), as amended in 1996 (18 USC 922)).

(2) Any person convicted in any court of a misdemeanor crime of domestic violence or a felony (the Lautenberg Amendment to the Federal Gun Control Act of 1968, as amended in 1996). The Amendment –

(a) Makes it a felony for any person to sell or otherwise dispose of firearms or ammunition to any person he or she knows or has reasonable cause to believe has been convicted of a misdemeanor crime of domestic violence.

(b) Prohibits anyone who has been convicted of misdemeanor crime of domestic violence from shipping or transporting in interstate or foreign commerce, or possessing in or affecting commerce, any firearm or ammunition; or receiving any firearm or ammunition which has been shipped or transported in interstate or foreign commerce.

(3) Prohibits any person who is a fugitive from justice.

(4) Prohibits any person who has been convicted in any court of the possession, use, or sale of marijuana, dangerous or narcotic drugs (the term convicted includes nonjudicial punishment under Uniform Code of Military Justice (UCMJ), Article 15).

(5) Prohibits any person who is presently declared mentally incompetent or who is presently committed to any mental institution.

Hunters will need to present serial numbers, make, and model of their weapons at the VCC for registration. Hunters are not to take the weapons into the VCC. Record the weapon information on paper and present it to the PMO representative. This service is free.

10. Special Area Regulations.

a. **Controlled Access Areas**. All hunters 12 years old and above are eligible to hunt the Controlled Access (CA) areas. The CA areas are located south of Route 301. This side of the installation contains the range and impact areas. Live weapon's firing creates Surface Danger Zones (SDZ) and the area contains unexploded ordnance (UXO) that is mostly contained in the impact areas. Outside of the perimeter of these impact areas is where these huntable 31 CA areas are located. Because of their location near these dangerous military operations, hunting in the CA areas has additional requirements.

(1) In addition to purchasing the FAPH General Hunting Permit, CA hunters must also acquire a CA Hunting Permit which is free.

(2) CA hunters fall into two categories, probationary (new to hunting in the CAs), and veteran (those that qualified as a veteran CA hunter for the 2009-2010 season and those that have been a probationary hunter for two seasons). Hunters 12-17 years of age may hunt in the CA areas when accompanied by a current probationary or veteran CA adult. Youth hunters will remain probationary hunters until they reach the age of 18 and must have been a probationary hunter for at least two seasons to become a veteran hunter at that time. Youth hunters are required to attend the CA briefing and pass the exam annually.

(3) Only probationary CA hunters must attend a CA briefing and pass a CA exam with a minimum score of 80%. The CA brief/exam will be scheduled beginning the last week of August or the first week of September and classes will be scheduled throughout the season. Please call the Fish and Wildlife Branch for information on class times (804) 633-8984. Significant changes in future regulations or in the Controlled Access areas will require all CA hunters (veteran and probationary), to attend briefings in upcoming years.

(4) If a hunter fails the exam they may attend the next CA brief and retake the exam.

(5) With the exception of Youth Hunters, probationary CA hunters will remain on probation for two seasons. This probationary period allows the new CA hunter to become familiar with the roads, gate system and boundaries.

(6) During this two year probationary period, these CA hunters may only hunt the following CA areas: 3, 4, 5, 7, 9, 11A, 11B, and 12. The only exception to this is described in (9) below.

(7) If a probationary CA hunter completes the two years of hunting without being disciplined for misconduct or involved in any violation of regulations or laws (FAPH, State or Federal), then beginning the third year they will become a veteran CA hunter and can hunt the remaining CA areas.

(8) No guests are allowed in the CA areas. All CA hunters and observers must be either veteran or probationary in status.

(9) A veteran CA hunter may take one probationary CA hunter with them into the veteran only CA areas. The probationary hunter must be in the same CA and be hunting with the veteran.

(10) If a veteran CA hunter is unable to hunt for one or more seasons (ex. military deployment) they remain CA veterans upon their return to hunting FAPH.

b. **Archery Hunting Only Areas**. TA 1, TA 24 and TA 31 are archery only. Exception: Duck hunters may hunt Maxey Gregg Pond in TA 1 with a shotgun during waterfowl seasons. Blaze orange is required in the archery only areas during any firearm deer season.

c. **Training Area 4.** TA 4 is reserved for hunters 65 years old and older as well as hunters with permanent mobility disabilities. To qualify as a disabled hunter and have the authority to hunt in TA 4, the hunter must qualify for and possess one of the following Virginia Hunting Licenses: Resident or Nonresident Annual Hunting License for 70 Percent Partially Disabled Veterans, Totally and Permanently Disabled Resident Special Lifetime License, Service-Connected Totally and Permanently Disabled Veteran Resident or Nonresident Annual or Lifetime Hunting License.

d. **Landing/Drop Zone**. Training areas 7, 8, and 9 border or contain a landing/drop zone. Hunters are prohibited from driving across the airstrip or taxiway in the drop zone.

11. Motor Vehicle Operation. The following regulations apply to operation of motor vehicles. Hunters violating these provisions are subject to prosecution and loss of hunting privilege.

a. **Off-road Vehicle Travel**. Off-road vehicle travel is prohibited. Hunters may only drive on roads that are marked as approved recreational roads on the Installation Hunting Area Recreation Map. If a hunter kills a deer that is close to a drivable road or trail that is not marked as legally drivable on the Recreation Map and needs to drive to the deer to keep from having a long drag, the hunter may drive to the deer at the operator's own risk. This is the only exception to traveling on roads or trails not marked as approved for recreational travel. The hunter must be able to show a Game Warden a notched Big Game license and a deer that has been harvested and travel was needed to reduce an unnecessary drag to be granted this option of access. A hunter may not drive on an unapproved road to drop off another hunter or hunting gear. At no time are

hunters permitted to drive around closed gates. Violators are subject to prosecution. **If hunters observe others driving on roads not approved for recreational travel and they are not retrieving a deer, they should immediately report the matter to 804-633-8888 and provide a detailed description of the violation.**

b. **Authorized Travel**. Hunters are authorized to travel to the VCC, Game Check Station, Outdoor Recreation, MWR Lodging and to their assigned hunting area and back by the most direct route only. No other vehicle travel is permitted.

c. **Vehicle Towing**. Owners operate vehicles at their own risk and are solely responsible for any towage or fees they may incur. Owners are also responsible for contacting and scheduling private towing companies to have the vehicle moved immediately. If a vehicle becomes stuck or breaks down, the hunter must notify the Fish and Wildlife Branch or Game Wardens at once. Government vehicles will not assist in any towing.

d. **Prohibited Vehicles**. Motorcycles (off road), mopeds, motorized bikes, and all types of ATV - UTV's may not be used while hunting.

e. **Parking**. Vehicles must be parked on the road shoulder adjacent to the approved drivable road in such a manner that it does not prohibit through traffic, block gates or any trails. Vehicles must not be hidden from view from the road. The parking permit must be displayed in such a manner it can be clearly read from outside of the vehicle. Improperly parked vehicles may be removed at the hunter's expense. Hunters must park their vehicle adjacent to their assigned open hunting area. All hunting access to FAPH must be from interior roads. No vehicles may be parked on exterior state roads to gain access to CAs or TAs.

f. **TA 1 Parking**. All archery hunters wishing to deer hunt in TA 1, adjacent to the Headquarter area must park in the authorized (hard surface-asphalt) parking areas ONLY! Any person violating this parking advisement may be warned (first time), cited and fined, have their vehicles towed (at their own expense), or a combination of the penalties listed above.

g. **Encountering Military Personnel**. If military personnel are encountered in the road or on the road shoulders, the speed limit to pass is 10 mph. The soldiers have the right of way.

12. Scouting. Scouting is permissible only during daylight hours, where it does not interfere with military training or recreation, from 1 September to **2** October; **4** January until **27** February; **28** March to **1** April; and from **4** April to **8** April. Possession of a current FAPH Hunting Permit is required and weapon possession is prohibited. Scouting must be check out and in through the FAPH iSportsman system. During other hunting seasons scouting is only allowed while that individual is checked out to hunt and carrying the appropriate weapon for that season.

13. Treestands. Only portable treestands may be used on FAPH. Occupying a permanent treestand is prohibited. Nails, spikes and screw in type tree steps are prohibited. Portable treestands may be left overnight, but the stands must be permanently marked with the name and phone number of the owner. Placing a treestand in an area does not guarantee or reserve that site for the hunter. Treestands are left overnight at the owner's risk. FAPH is not responsible for any lost, stolen or damaged stands. If a treestand is missing, it should be reported to the DES (633-8888). Portable treestands must be removed after the hunting season. Any stands left between 1 February and 31 August will be considered permanent and removed.

14. Dogs.

a. **Collar and Tags**. In accordance with APH Reg 200-1 the owners or custodians of all dogs brought onto FAPH that are to be used for hunting purposes must have in their possession proof that the dogs have current vaccinations administered by a licensed veterinarian, and must be able to produce this documentation on demand. Dogs must have collars or tags bearing their owner's name, address, and phone number. The owner shall comply with all Caroline County dog licensing laws while hunting with a dog. FAPH is not responsible for the loss, death or injury of any dogs that are hunting.

b. Dogs Running at Large. Dogs running at large is a significant problem on FAPH. If hunters witness dogs running at large on FAPH property, or individuals that appear to be trying to retrieve or drive deer dogs, they are to immediately report the situation in as much detail as possible to the Police Desk at 804-633-8888 or the Fish and Wildlife Office at 804-633-8984.

In accordance with Caroline County Code, Chapter 21, Article IA. 21-8:

i. It shall be unlawful for any owner or custodian of a dog to permit the same to run at large at any time within this County, except when engaged in lawful hunting in the open season and accompanied by the owner or custodian. For the purpose of this section, a dog shall be deemed running at large while roaming, running or self-hunting off the property of its owner or custodian and not under its owner's or custodian's immediate control.

ii. Any person who allows a dog or canine crossbreed to run at large in violation of this chapter shall be fined $75 for the first violation, and an additional $50 shall be added to this amount for every subsequent violation within a twelve-month period of time, up to the maximum allowed by law. Each occurrence of a dog or canine crossbreed belonging to a particular owner running at large in violation of this chapter shall be considered a separate violation, and an additional penalty shall apply as set out in this section regardless of whether or not it is the same dog or canine crossbreed that was found to be running at large. (Code of Virginia § 3.2-6538)

Dogs caught running at large on FAPH property will be taken to the Caroline County Animal Shelter by the FAPH Pest Controller.

If a hunter picks up a "lost" dog, the hunter accepts responsibility of the dog and getting the dog to the owner. There are no facilities available to drop off dogs on FAPH. Dog owners retrieving dogs that have run onto FAPH and have been caught here are not permitted on the Garrison unless they have been vetted through the VCC and escorted by a Government employee. Owners searching for dogs released on private property that are believed to have strayed onto FAPH is not permitted. Virginia's "Right to Retrieve" law is not applicable on FAPH property.

c. **Shooting Dogs**. It is illegal to shoot or harm dogs on FAPH.

d. **Hunting with Dogs**. Dogs may be used only for hunting squirrel, rabbit, waterfowl, quail or fall turkey. Deer hunting with dogs is prohibited. Deer cannot be killed while hunting other game with a dog. Any member of a hunting party who kills a deer while checked out to hunt with a dog will have his or her hunting privileges revoked. Deer may not be killed while being pursued by a dog.

e. **Retrievers in CA Areas**. Waterfowl hunting with retrievers is allowed on the ponds in the CA areas during the appropriate waterfowl seasons. All other types of hunting with dogs in the CA areas are strictly prohibited.

f. **Training Hunting Dogs**. **The training of hunting dogs is prohibited on FAPH with one exception. Retrievers may be trained in TAs ponds outside of all deer seasons. A FAPH hunting permit is required and the trainer must check out through the iSportsman system to the pond or Training Area.**

15. Miscellaneous.

a. **Waterfowl**. A boat or retrieving dog is required when hunting over lakes and ponds too deep to wade, and recommended for jump shooting along streams or creeks. Construction of permanent blinds is prohibited. Temporary blinds (camouflage netting, sticks, etc.) may be created if removed the same day as construction. NOTE: Waterfowl hunters may hunt Maxey Gregg Pond in TA 1 with a shotgun. All other hunting in TA 1 is archery only.

b. **Refrigeration Unit Use**. Family, Moral, Welfare, and Recreation (FMWR), maintains two refrigeration units located beside the Outdoor Recreation Center (Bldg 390). Hunters that want to temporarily store deer in these refrigerators may rent space, if room is available, from FMWR. Deer must have the official Virginia Game Check Card attached to its ear in a manner in which it will not become detached. FMWR will provide all terms and fee information (804-633-8244).

c. **Spring Gobbler Season Callers**. During the spring gobbler season, hunters who have reached their season bag limit are authorized to call turkeys for other hunters as long as they do not have a weapon in their possession. These individuals will be checked out under the daily permit of the hunter they are assisting and will not be issued a separate permit.

d. **Late Season Antlerless Deer**. It is not uncommon for some bucks to begin shedding their antlers in mid-December in years when the oak acorn crop is poor. During the late either-sex deer seasons it is asked that hunters take the time to use binoculars or scope to scan the head for signs of scabbing to help ensure that the deer you believe to be a doe is so and not a mature buck that has already shed its antlers.

e. **Information Point of Contact**. The Fish and Wildlife Branch is always eager to receive feedback and constructive suggestions from our hunters. If you have questions or input that you would like to share please feel free to contact Ben Fulton – Senior Wildlife Biologist 804-633-8984 or email to c.b.fulton.civ@mail.mil.

TRAPPING

1. General Information and Policy. Recreational activities at Fort A.P. Hill (FAPH) are authorized and controlled by the Garrison Commander in accordance with the applicable Federal, State, and County laws and Department of the Army Regulations. Minimum restrictions on all recreational activities are established to ensure safety, security, protection of property, and efficient accomplishment of FAPH missions. Federal and State Governments have concurrent legislative jurisdiction on most parts of FAPH. This regulation sets the policies, laws, restrictions and procedures for all trapping activities on FAPH.

a. **Penalties.** Each trapper is responsible for knowing and adhering to Federal, State, County and FAPH Hunting and Trapping Laws and/or Circulars/ Regulations. Anyone failing to comply with any hunting or trapping laws and/or circulars/regulations and/or any conduct hazardous to life and safety may be excluded from the Installation, have their recreational privileges revoked, be fined, be confined, be issued applicable citations and/or any combination of the penalties listed as allowed by law. If a trapper violates a FAPH or State regulation, they will forfeit their privilege to trap.

b. **Weapons.** In accordance with the current FAPH Hunting and Trapping Circular/Regulations, all weapons must remain unloaded during transport. Exception to the FAPH Hunting and Trapping Circular/Regulations: after registration with the Directorate of Emergency Services/Provost Marshall Office (DES/PMO), 14115 Montague Road, Fort A.P. Hill, VA 22427-3114 trappers are authorized to carry a pistol while checking traps, and use a light to check traps during hours of darkness. NOTE: When worn, pistols cannot be concealed. **Note: see FAPH Regulation 190-5 regarding storage of weapons on FAPH.**

c. **Procedures.** Trapping is open to the general public via lottery style drawing for each season. Potential trappers are not required to be present, but must submit their name and preferred trapping zones to the Fish and Wildlife Branch prior to the drawing. The post is divided into 9 trapping zones. Trappers choose their zone when chosen in the lottery. Extra zones will be cycled through until all zones have a trapper assigned to it. There will be no trapping zones in the CA areas. **Trapping on FAPH is a privilege, not a right.**

d. **Companion Animals**. **In the case that a companion animal (Dogs/Cats) is caught in a trap the animal is not to be dispatched. Companion animals will either be released alive or the trappers may contact the Game Warden(s) for guidance. No companion animal will be dispatched by trappers on FAPH.**

2. What is Needed to Trap on Fort A.P. Hill.

a. **Licenses**. Both a Virginia trapping license and FAPH trapping permit are required to trap any animal. Each trapper will be provided a recreation map when they purchase their FAPH trapping permit and a map of their assigned trapping zone at the lottery drawing. New trappers on FAPH must view the FAPH Safety Orientation slide presentation located on the FAPH iSportsman website. “New trapper” is defined as all trappers that have not trapped FAPH in the past two years.

b. **Force Protection Requirement**. In accordance with Army Regulation 190-13, "The Army Physical Security Program” regarding un-escorted access to military installations, a Criminal History Check must be completed before being granted access to FAPH. This Criminal History Check can be done at the VCC during normal business hours, or pre-filing your data by email at https://faph.isportsman.net/.

c. **Guests**. FAPH does not allow guests to accompany trappers while they are conducting trapping operations. Each trapper may designate an alternate. Each trapper and alternate will be given a “Vehicle Identification Card” to be displayed in the dashboard of the trapper’s vehicle at all times. The alternate trapper must have all the appropriate background checks, licenses and permits.

3. Steps to Trapping on Fort A.P. Hill. Trappers must adhere to the following to be eligible to participate in trapping on FAPH. Trappers are chosen by lottery drawing held annually in the middle of December. Call (804) 633-8984 for information on drawing date.

a. Step 1 – Trappers are required to complete the FAPH Trapper Information Card and submit the card to the Fish and Wildlife Branch, Bldg. 308, Anderson Camp. Trappers must carry a copy of this form when checking traps.

b. Step 2 – Trappers must possess required Virginia state trapping license in addition to the Installation trapping permit.

c. Step 3 – To gain access to FAPH, a criminal history check is required. This can be completed upon entrance to the Garrison at the Visitor Control Center (VCC) during normal business hours, by visiting https://faph.isportsman.net/ and completing the background information and emailing the form through your private email account to the VCC, or as directed by the Provost Marshal Office (PMO), Police Desk free of charge.

d. Step 4 – Trap specifications must adhere to those outlined in the current Virginia Hunting and Trapping Regulations with the exception that snares will not be legal for use on FAPH except for water sets targeting beaver and otter. The name of the trapper must be attached to every trap or trappers may use the VA permanent identification number on their traps instead of their name. All assigned numbers for use to mark traps must be provided to the Fish and Wildlife Branch, Bldg. 308, Anderson Camp.

e. Step 5 – All Traps (including water sets) must be visited daily and all captured animals must be removed daily. Trappers are required to wear Blaze Orange (hat and vest) at all times. **All animals must be dispatched in a quick and humane manner**. Disposal of animal carcasses from the trapping season is prohibited on FAPH lands.

f. Step 6 – New trappers on FAPH must view the FAPH Safety Orientation slide presentation located on the FAPH iSportsman website.

g. Step 7 – All trappers must sign the signature page of the FAPH Hold Harmless Agreement to verify that the trapping regulations have been read and that all rules and regulations will be abided by. The signature page will be retained by the Fish and Wildlife Branch office.

h. Step 8 – Each trapper will note general trap locations on the provided map of their assigned trapping zone. The trapper must keep track of the number of traps deployed and ensure that all traps are accounted for when the traps are pulled.

i. Step 9 – Each trapper will be given a harvest sheet to be used to track all game harvested. All animals trapped – both target and by catch – must be reported on the harvest sheet and turned into the Fish and Wildlife Branch by **4 Mar 16**. Failure to turn in the harvest data will make the trapper ineligible for entry into the lottery for the following season.

4. Check-In/Check-Out Procedures. All trappers and alternates must sign in and out in the trapper's log at Range Operations daily. Trappers are required to record type of sets and general site locations.

5. CA Access. CA areas will not be open to recreational trapping. Beaver problem areas will be dealt with on a case by case basis by the Fish and Wildlife Branch. Anyone interested in addressing problems in the CA areas, please contact the Fish and Wildlife Branch at (804) 633-8984.

6. Permit Fees. FAPH trapping permit fee is $10.00/season.

7. Trapping Seasons. Trapping season on FAPH will tentatively begin on **4 Jan 16** and will run until **29 Feb 16** (see Appendix B for species and restrictions). **Reptile and amphibian trapping is not permitted on FAPH.**

8. Motor Vehicle Operation. Off-road vehicle travel is prohibited. Vehicles may only be operated on paved and gravel roads open to normal vehicle travel as shown on the FAPH Recreation Area Map. Vehicle travel on any roads, trails, and fields other than what is marked in bold on the hunting map, is strictly prohibited. At no time are trappers to drive around closed gates. Violators are subject to prosecution. Vehicles must be parked on the road shoulder adjacent to the approved drivable road in such a manner that it does not prohibit through traffic, block gates or any trails. Vehicles must not be hidden from view from the road. The parking permit must be displayed so it can be clearly read from outside the vehicle. Improperly parked vehicles may be removed at the trapper's expense.

9. Questions. Any questions concerning trapping should be directed to the Fish and Wildlife Branch at (804) 633-8750.

FISHING

1. General Information and Policy.

a. All fishing activities on Fort A.P. Hill (FAPH) are managed through the iSportsman system (see Appendix C). FAPH operates a fishing program in the areas used for military training on the Installation. This program is intended to offer public recreational fishing and opportunities to assist in fisheries management. Fishing on FAPH is a privilege, not a right.

b. There are NO guarantees of access to fish on FAPH. Recreational activities are opened or closed based upon military training/security, weather conditions and/or biological management objectives. Anglers are reminded that other recreation activities, such as hunting, may be taking place in the area. During hunting seasons it is advised to wear blaze orange or other highly visible clothing to alert hunters to your presence.

c. By entering the Installation, every individual consents to the inspection of their person and/or vehicles by law enforcement personnel and the confiscation of all contraband or evidence of unauthorized activities.

d. Violations of rules, regulations, and/or laws may result in loss of fishing and hunting privileges, criminal prosecution, and/or permanent exclusion from FAPH. All observed violations of Federal, State, Caroline County, or FAPH regulations or laws must be reported to the FAPH Police Desk (804) 633-8888, or for non-urgent calls (804) 633-8454.

e. Accidents and lost persons must be immediately reported to the FAPH Police Desk: Emergency (804) 633-8911 or Non-emergency (804) 633-8888 and the Range Operations (804) 633-8224.

f. The dangers inherent as a result of military training exist in all areas. It is possible to find unexploded ordnance (UXO) anywhere. If a UXO is found, mark the area, not the UXO, and report it to Range Operations (804) 633-8224. Digitally signing of the General Release Statement relieves the Government of responsibility, i.e., “Fishing at your own risk.”

g. Wading or swimming in FAPH waters is prohibited. All military/civilian personnel requesting waterborne type training must have prior written approval from the Garrison Commander.

h. Open fires are not permitted at any time. Anyone locating a fire should report it to the FAPH Police Desk: Emergency (804) 633-8911 or Non-emergency (804) 633-8888.

i. Unless otherwise addressed in this regulation, Fishing on FAPH will be in accordance with Virginia State laws, applicable federal laws and supplemental orders issued by the Garrison Commander. Any supplemental order will be posted on the iSportsman website, Visitor Control Center (VCC) kiosk, & the Fish & Wildlife Branch Office (Bldg. 308).

2. What is Needed to Fish at Fort A.P. Hill?

a. To be eligible to fish on FAPH an angler must possess, or have accomplished, the following:

(1) Step 1 – Must possess a valid Virginia or Caroline county fishing license (unless exempt).

(2) Step 2 – Create a user profile in the iSportsman system and digitally sign the General Release Statement.

(3) Step 3 – A criminal history check is required to gain access to FAPH. See 2.b. below. These can be completed upon entrance to the Garrison at the Visitor Control Center (VCC) during normal business hours, or by visiting https://faph.isportsman.net/ and completing the background information and emailing the form through your private email account to the VCC.

(4) Step 4 – Once the VCC has approved and activated the anglers account, they can log back into their iSportsman account and purchase the desired FAPH permits.

(5) Step 5 – Read, understand, and follow by the current FAPH fishing regulations and recreation map.

b. Force Protection Requirement. In accordance with Army Regulation 190-13, "The Army Physical Security Program" regarding un-escorted access to military installations, a Criminal History Check must be completed before being granted access to FAPH. This Criminal History Check can be done at the VCC during normal business hours, or pre-filing your data by email at https://faph.isportsman.net/ .

c. Fort A.P. Hill Fishing Permit. Prior to purchasing a FAPH Fishing Permit, an angler must pass a current Criminal History Check, possess a current Virginia State or Caroline County Fishing License (resident or nonresident as applicable), and complete the FAPH fishing application and General Release Statement. A qualified guardian is required to sign a General Release Statement for children 17 years of age or under.

d. Combination Permit. If an angler chooses to purchase a Combination Hunting and Fishing Permit, the permit is valid from 1 September 2015 – 31 August 2016.

e. Permit Fees. FAPH honors Virginia's Free Fishing Days. A free FAPH Free Fishing Days permit will be required on these days. All Criminal History Check requirements must be satisfied. Reference the 2015 Virginia Fishing Regulations for applicable dates.

PERMIT TYPES	**PERMIT COST/EXPIRATION**
General Fishing - 16 – 64 years old	**$20.00/season** – expires 1 year from date of purchase
General Fishing/Hunting Combo – 16+ yrs old	**$60.00/season** - expires on 31 August 2016
Turned 65 years old from 1Sep2015 to date of purchase	**$8.00** – expires 1 year from date of purchase
65+ years old prior to 1 September 2015	**FREE** expires 1 year from activation
Disabled Fishing Must possess a Virginia Resident Disabled Hunting license or a Virginia Nonresident Disabled License	**FREE** expires 1 year from activation
Five Day Fishing – 16+ yrs old	**$5.00** - valid for 5 consecutive days
Youth Fishing - under 16 years old	**FREE** (expires 1 year from activation)
Virginia Free Fishing Days	**FREE** (Valid for 3 VA free fishing days)
Fishing Observer	**FREE** (expires 1 year from activation)

3. Telephone Numbers

BUILDING	SERVICES AND PHONE NUMBERS
Fish and Wildlife Branch Building 308 Anderson Camp	**iSportsman** (844) 326-3113 **Fish and Wildlife Branch:** (804) 633-8984/8750
Directorate of Emergency Services (DES) Provost Marshal Office Building #156	**FAPH Police Desk:** (804) 633-8888 Emergency – (804) 633-8911 **For suspected game violations:** 1st (804) 633-8888 Police Desk 2nd (804) 633-8434 Game Warden (Office) 3rd (804) 633-8454 Game Warden (Voicemail)
Visitor Control Center	**Annual Criminal Background Check:** (804)-633-8585.

4. General Fishing Regulations.

a. Every permitted angler is now required to check in to the fishing areas they wish to fish through the iSportsman system. If the angler would like to switch areas and fish another location they must Check out of their current fishing area through iSportsman, and then Check into another open fishing area.

b. Legal hours for fishing on FAPH are ½ hour before sunrise until ½ hour after sunset. No waterborne activities will occur outside of the legal fishing hours. Anglers are not permitted to enter the installation or check in to fish prior to 1.5 hrs before sunrise and must check out of iSportsman and be off the installation no later than 1.5 hrs after sunset. Anglers are not permitted on FAPH outside of the check in/out time unless they are staying in recreational lodging.

c. The use of trot lines is not permitted on FAPH.

d. Bowies Pond, Lower Smoots Pond, & Whites Lake are the only fishing areas that anglers may access from state maintained roads. All other fishing areas must be accessed from the interior of the installation. Anglers are reminded that fishing in these waters requires all applicable State licenses, FAPH permits, and check in through iSportsman.

e. Fishing any waters in the Controlled Access Areas is strictly prohibited except for Lower Smoots Pond and Whites Lake which must be accessed off of state maintained roads.

f. Fishing contests/tournaments, with the exception of MWR sponsored events, are prohibited without the prior written approval of the Garrison Commander. To request permission, send a written request to: Garrison Commander, Headquarters, U.S. Army Garrison, 18436 4th Street, Fort A.P. Hill, VA 22427-3114.

5. Game/Sport Fish Regulations.

a. All fish exceeding the daily creel limits must be released back into FAPH waters unharmed.

b. All waters that lie within the boundary of FAPH have the following creel and length limits. The daily creel limit represents daily totals from all waters combined. All harvested fish counting towards the daily creel limit must be recorded in iSportsman when the angler checks out from fishing**:**

Creel and Length Limits

TYPE OF FISH	**DAILY CREEL LIMIT**	**LENGTH LIMIT**
Largemouth Bass	**2**	Only 1 per day longer than 20”
Crappie	**25**	NONE
Bluegill (bream) and other sunfish excluding crappie	**50**	NONE
Channel Catfish	**5**	NONE
Chain Pickerel	**5**	NONE
Grass Carp	ALL MUST BE RELEASED	N/A
Please reference the current Virginia Fishing Regulations for species not specifically mentioned in this table. Daily Creel Limits represent the maximum number of fish from all FAPH waters combined.		

6. Nongame Fish, Reptile, Amphibian, and Aquatic Invertebrate Regulations.

a. No turtles may be harvested from FAPH.

b. Anglers should reference the current Virginia Fishing Regulations for details on the harvest of all other nongame species.

7. Boating Regulations.

a. Boats powered manually or by electric motors are permitted on all FAPH waters. Gasoline powered boat engines up to 9.9 horsepower are permitted on the Smoots, Whites, Bowies, and Reynolds Run Ponds only. Engines larger than 9.9 hp are only permitted to be operated on these waters at idle and to trailer a boat. All oil or gasoline spills must be immediately reported to Department of Emergency Services (DES) at 804-633-8911/8888/8239 and call the Environmental and Natural Resources Division 804-633-8255 and Range Operations 804-633-8224.

b. Anglers should be reminded that all children under 13 years of age are required by federal law to wear an appropriate coast guard approved Personal Flotation Device (PFD) at all times while onboard any boat on FAPH waters.

c. All applicable local, state, and federal boating laws and regulations will be strictly observed and enforced while fishing on FAPH waters. Anglers should reference the "Virginia Watercraft Owner's Guide" which can be found at www.HuntFishVA.com for current boating regulations and boating safety education requirements.

8. Check-In/Check-Out Procedures.

Checking IN to Fish	Checking OUT from Fishing
No waterborne activities will occur outside of the legal fishing hours. Legal hours for fishing on FAPH are ½ hour before sunrise until ½ hour after sunset. Anglers may check in no earlier than 1.5 hrs before sunrise and must proceed, by the most direct route, to their fishing destination that they have checked in to through the FAPH iSportsman system.	The end of legal fishing time is ½ hour after sunset. All anglers must check out of the iSportsman system by 1.5 hrs after sunset. Failure to do so will result in their account being placed on administrative hold. Anglers must proceed in the most direct route to exit FAPH or to their FAPH lodging facility.

a. **Procedures**: To check in to a fishing area, anglers must check in using the FAPH iSportsman system either by phone, computer, smartphone, or at the iSportsman kiosk located at the VCC. The fishing permit must be printed and carried on the anglers' person, and the vehicle pass must be displayed face up on the left side of the dashboard of the anglers' vehicle so it is clearly visible. The vehicle pass for each angler traveling in a vehicle must be clearly displayed. Vehicles not displaying an iSportsman vehicle pass will be towed at the owner's expense and their fishing privileges will be suspended. When finished fishing, every angler must check out of their fishing area using the iSportsman system. All fish harvested must be reported in the system upon Check Out in iSportsman. Failure to leave and check out of the fishing area by the designated closing time will result in an automatic hold placed on all fishing privileges, and a search for the angler based on the presumption that the angler is either lost or injured. Anglers must be out of their assigned areas, checked out through the iSportsman system, and headed off of FAPH property prior to the Check Out from Fishing Time for that date.

b. **Fishing Areas:** Ponds and Training Areas open to fishing are designated daily according to military needs. Anglers are restricted to fishing only in their assigned area, but will be permitted to change areas when space is available by checking out of their current area and into another area using the iSportsman system by phone, internet or kiosk. Anglers may only check in to one area at a time, no exceptions.

c. **Observers:** A non-fishing observer may accompany a licensed angler as long as they do not participate in fishing. In order to do this each individual wishing to accompany an angler must create a free account in the iSportsman system, complete the background check, and check in as a non-fishing observer through iSportsman.

d. **Evacuate Fishing Areas**: Anglers must immediately leave their assigned fishing area and return to their vehicle if:

(1) There is contact with military personnel engaged in military training within the assigned fishing area. This means that either military personnel or the anglers are in the wrong area. Contact Fish and Wildlife Branch personnel (804-633-8984) or Range Operations (804-633-8224) to correct the problem. The angler will either be allowed back into the area once it is clear, or they will be assigned to another area.

(2) There is a notice broadcast from loud speakers situated all over the Installation. This system may signal an emergency or unsafe condition and may instruct all personnel to leave the areas and return to their vehicle or safe area.

(3) Directed by Range Operations.

(4) Notified by the FAPH iSportsman system by auto-call, text message, or email to evacuate the area.

9. Prohibited Activities and Restrictions. The following actions are prohibited on FAPH and may differ from state and county laws or ordnances. The list also includes violations that are state laws but are included for emphasis.

a. **Trespassing:** Anyone found in a Permanent Restricted Area or in any other area (Training Area, Controlled Access area) without approval will have their FAPH recreation privileges revoked. All equipment (fishing gear, vehicles, etc.) in the individual's possession may be impounded by FAPH Game Wardens. Signing in to one area and fishing or entering a different area is prohibited and will result in loss of recreation privileges. Additionally, personnel found poaching/trespassing will be subject to prosecution and/or administrative action. Personnel reporting violations should contact the A.P. Hill Police Desk at (804) 633-8888 or the Game Wardens at (804) 633-8434.

b. **Driving Roads: Anglers are to proceed directly to and from their assigned fishing area by the most direct route of approved recreation roads.** Driving FAPH

roads and trails to observe wildlife or for any other purpose other than to reach or leave the assigned fishing area is prohibited.

c. **Accessing Ponds, Legal Fishing Hours:** Anglers may not check in and proceed to their assigned fishing areas prior to 1.5 hrs before sunrise. Fishing will not commence prior to one-half hour before sunrise and will end no later than one-half hour after sunset. All anglers must be checked out by 1.5 hrs after sunset.

d. **Government Property**: Picking up, touching or taking Government equipment, ordnance, munitions or parts of the same is prohibited. Defacing, climbing on, or disturbing any part of a building, range structure, sign, equipment or property found on FAPH is also prohibited.

e. **Interfering with Anglers:** Intentionally interfering with the lawful pursuit of taking of wildlife or disturbing any wildlife for the purpose of disrupting an angler is prohibited.

f. **Artifacts**: Unauthorized excavation or digging is prohibited. The collection of any artifact (such as Civil War artifacts, old bottles, coins, etc.), disturbance of any feature related to past human activity, and the collection of paleontological specimens on FAPH is prohibited. The use of metal detectors on FAPH is strictly prohibited. Violators will be both prosecuted under and criminal provisions of the Archeological Resources Protection Act (ARPA), 16 USC Sec. 470ee and assessed civil (monetary) penalties under ARPA Sec. 470ff.

g. **Littering:** Littering or disposing of refuse except in receptacles provided for that purpose is prohibited.

h. **Photography:** Do not photograph installation facilities, training equipment, or troops while on FAPH.

i. **FAPH Access Under False Pretenses:** If a person falsely uses a fishing permit to gain access to FAPH and is not on the Garrison to fish, that person may be subject to the loss of all FAPH privileges.

j. <u>Transporting Aquatic Vegetation</u>. All anglers must remove aquatic vegetation from gear, boats, and boat trailers before moving to a different body of water to prevent the transportation of undesirable aquatic vegetation while on FAPH.

APPENDIX A
2015-16 FORT A.P. HILL (FAPH) HUNTING SEASONS AND BAG LIMITS

DEER

Deer Management Policies

1. The daily deer bag limit is one.

2. The 2015-16 total of all seasons combined limit is **three** deer per hunter **only one of which may be antlerless**.

3. **Antlered Point Restrictions -** The total of all season's limit of antlered bucks is two per hunter.

a) Training Areas (TAs) – If two antlered bucks taken in the TAs: One antlered buck must have at least three legal points one inch or longer on one antler.

b) Controlled Access Areas (CAs) – If two antlered bucks taken in the CAs: One antlered buck must have at least three legal points one inch or longer on one antler. The other antlered buck must have at least four legal points one inch or longer on one antler.

c) Combination of one TA antlered buck and one CA antlered buck – The TA antlered buck has no antler point restriction and the CA buck must have at least three legal points one inch or longer on one antler.

4. Bonus deer tags, sold by the VDGIF, will be accepted for antlerless deer as long as the hunter does not surpass the FAPH daily and season limits.

5. The proper deer tag located on the Virginia State Big Game License must be notched at the place of kill before moving the animal. It is a violation of state law and this regulation to transport a deer without having notched the appropriate tag. Deer are to be taken, by the most direct authorized route, to the Game Check Station.

6. Antlered deer have visible polished bone above the hairline.

7. Buckshot may not be used to hunt deer and may not be in the hunter's possession or vehicle.

8. It is not uncommon for some bucks to begin shedding their antlers in mid-December in years when the oak acorn crop is poor. During the late either-sex deer seasons it is

asked that hunters take the time to use binoculars or scopes to scan the head for signs of scabbing to help ensure that the deer you believe to be a doe is so and not a mature buck that has already shed its antlers.

9. During the Firearms Deer Season the either sex hunting days for the Training Areas and the Controlled Access areas differ.

YOUTH AND APPRENTICE DEER HUNTING DAY

26 September

Bag Limit:

- One deer limit. Either-sex. These deer count against season limit of three.

- Deer hunters, 15 years of age and under and apprentice license holders, when in compliance with all applicable laws and license requirements, may hunt deer when directly supervised by an adult who has a valid Virginia hunting license on his person or is exempt from purchasing a hunting license.

- Antlerless deer taken on youth deer hunting day are in addition to an antlerless deer taken under the special youth antlerless deer regulation. For example if a youth hunter kills an antlerless deer on the youth deer hunting day, he or she may still take an antlerless deer under the special youth antlerless deer regulation.

- Adult hunters accompanying youth and apprentice hunters may not carry or discharge firearms.

- Youth and apprentice hunters and adult hunters accompanying the youth must wear the same amount of blaze orange as required during the general deer gun season. See Section 7a. Blaze Orange in the FAPH Hunting Regulations.

SPECIAL YOUTH ANTLERLESS DEER REGULATION

- Deer hunters 15 years of age and under, resident or non-resident, may take one antlerless deer per license year on days that are designated as antlered deer only. This antlerless deer counts against the season limit of three deer.

EARLY ARCHERY DEER SEASON

3 October – **13** November

Bag Limits:

- Either-sex all areas until **13** November. **Antler point restrictions apply (See 3-a, b, c).**

- One deer per day. Total of **three** per year all seasons combined. Limit of two antlered bucks **and one antlerless deer** per year total.

- TA's 1, 24, 31 are archery only. **No antlerless deer may be taken after 13 November in these areas.**

- Archery hunters may hunt in other areas that are not listed above during firearms seasons, but must follow firearm season limits and regulations.

MUZZLELOADER DEER SEASON

31 October – **13** November

Bag Limits:

- **No either-sex deer hunting days in all areas. Antler point restrictions apply (See 3-a, b, c).**

- **One antlered deer per day**. Total of two antlered bucks per year all seasons combined.

FIREARMS DEER SEASON

14 November – **2** January

- Training Area (TA) **No either-sex hunting days**.

- Controlled Access Areas (CA) either-sex hunting days: **14 November, 21 November, 28 November, 26 December, and 2 January.**

Bag Limits:

- One deer per day. Total of **three** per year all seasons combined. Limit of two antlered bucks **and one antlerless deer** per year total. **Antler point restrictions apply (See 3-a, b, c).**

TURKEY

FALL TURKEY

ARCHERY TURKEY SEASON

3 October – **7** November

FALL FIREARMS TURKEY SEASON

24 October – **6** November; **26** November; **30** November – **26** December, and
9 January – **23** January

Season Limit:

- 1 per day. Maximum of 2 turkeys in the fall/ 3 per year. Either-sex.

<u>YOUTH AND APPRENTICE FALL TURKEY DAY</u>

17 October

Bag Limit:

- 1 Turkey, Either-sex.

- Youth must be 15 years old or younger and have appropriate hunting license, resident youth under the age of 12 are not required to have a state license.

- All youth and apprentice hunters must be accompanied and directly supervised and within sight of an adult. Adult hunters accompanying youth must possess a valid Virginia hunting license (or be exempt from purchasing a hunting license); may assist with calling and shall not carry or discharge a firearm.

<u>SPRING TURKEY</u>

SHOTGUN, ARCHERY, AND MUZZLELOADER SEASON

9 April – **14** May

- One-half hour before sunrise until 12 noon each day.

<u>YOUTH AND APPRENTICE SPRING TURKEY DAY</u>

2 April

- One-half hour before sunrise until 12 noon.

- Youth must be 15 years old or younger and have appropriate hunting license, resident youth under the age of 12 are not required to have a state license.

- Bag limit is one per day, bearded birds only.

- All youth and apprentice hunters must be accompanied and directly supervised and within sight of an adult. Adult hunters accompanying youth must possess a valid

Virginia hunting license (or be exempt from purchasing a hunting license); may assist with calling and shall not carry or discharge a firearm.

BEAR

ARCHERY BEAR SEASON

3 October – **13** November

MUZZLELOADER BEAR SEASON

7 – **13** November

FIREARMS BEAR SEASON

23 November – **2** January

Bag Limit: One per license year.

- Bear must be at least 100LBS live weight or 75LBS dressed. No females with cubs may be harvested. Must be checked at the FAPH Game Check Station.

SMALL GAME HUNTING

QUAIL

7 November – **30** January

Bag Limit:

- Three per day.
- Twelve per season.
- Must report harvest in iSportsman.

RABBIT

7 November – **27** February

Bag Limit:

- Six per day.
- Must report harvest in iSportsman.

SQUIRREL

5 September – **27** February

Bag Limit:

- Six per day.
- Must report harvest in iSportsman.

CROW

2 September – **27** February on Monday, Wednesday, Friday and Saturdays only.

RUFFED GROUSE - Closed.

GROUNDHOG – Hunters may take at any time while checked out to hunt.

COYOTE and FERAL HOGS– Hunters may take at any time while checked out to hunt. Report harvest to Game Check Station. Biologists would like to weigh all harvested hogs and coyotes.

Electronic Calls – Electronic calls are permitted for bobcat, coyote, and fox.

FOX

1 November – 28 February

Dogs may not be used.

BOBCAT

ARCHERY BOBCAT SEASON

3 – **30** October

Dogs may not be used.

FIREARMS BOBCAT SEASON

31 October - **27** February

Dogs may not be used.

Bag Limit: One per season.

RACCOON

FIREARMS RACCOON SEASON

31 October – **27** February

Dogs may not be used.

DOVE - Doves may be hunted in accordance with Virginia season and bag limits.

WOODCOCK - Woodcock may be hunted in accordance with Virginia season and bag limits.

WATERFOWL - Waterfowl seasons established by the Virginia Department of Game and Inland Fisheries will be in effect at FAPH for the 2015 – 2016 season. This includes any Virginia special waterfowl hunting days for youth.

APPENDIX B

Fort A.P. Hill (FAPH) TRAPPING SEASON 04 January – 29 February
Species and Special Restrictions

Furbearer species that may be trapped by regulated season in Virginia Include:

Beaver
Bobcat
Bobcat Bag limit: The season bag limit shall be 12 bobcats in the aggregate, taken by hunting and trapping combined. **All trapped bobcats must be reported within 24 hours through the Department's electronic harvest reporting system.** A CITES tag may also be required for some bobcats. Please see VA Hunting and Trapping Guide page 46 for details regarding bobcat checking and tagging procedures.
Coyote
Fox
Mink
Muskrat
Nutria
Opossum
Otter
Otter Bag Limit: There is no season bag limit in counties east of the Blue Ridge only. **CITES Tagging Requirement For Otter:** Otter pelts that are sold, traded, transported out of state, or shipped out of state must also have a CITES tag affixed to each animal. No CITES tag is needed to have an otter mounted by a Virginia taxidermist or ship an otter pelt out-of-state for tanning purposes. To obtain a CITES tag, contact your local Conservation Police Officer or the nearest Department regional office (listed on page 6 of the VA Hunting and Trapping Guide). All otter pelts required to have a CITES tag must have them affixed by April 1.
Rabbit
May be taken with box traps until January 31, provided no traps shall be set on the lands of another without written permission of the landowner.
Raccoon
Skunk
Open season for striped skunk only. Continuous closed season for taking spotted skunk and the pelts of spotted skunk may not be sold.
Weasel

APPENDIX C
iSportsman Instruction

Please remember, it is your responsibility to read and understand these regulations in their entirety. To receive clarification or interpretation of these regulations, users should contact the Fish and Wildlife Branch (804) 633-8984, the Game Warden Office (804) 633-8454, or Range Operations (804) 633-8224.

a. FAPH iSportsman System:

(1) iSportsman is a web and phone based system. User transactions will be run through this system.

(2) Checking into and out of areas can be performed by phone, on the FAPH iSportsman website, or at the kiosk located at the Visitor Control Center (VCC).

(3) Permits are no longer sold at the Outdoor Recreation Building.

(4) The Game Check Station is now located across from the Fish and Wildlife Branch in Anderson Camp.

(5) No daily cards to pick up and drop off.

(6) May change areas by phone or web page.

b. How iSportsman works:

(1) All people wishing to hunt, be a hunt observer, fish, trap, cut firewood, scouting, or any other type of dispersed recreation such as biking, hiking or bird watching will be required to create a user profile, obtain appropriate permits and check in and out of areas using the iSportsman system.

(2) The iSportsman website contains all the information you need to enjoy the outdoor opportunities at FAPH. www.faph.isportsman.net.

(3) Regulations, Maps, Permit Sales, Open and Closed Areas, Reservations for Tomorrow's Hunting, Checking In and Out of Areas, Harvest Totals, and Pictures are just some of the features that are offered in this iSportsman website.

(4) All permit sales will be purchased by credit card/debit card through the iSportsman website.

(5) Checking into and out of areas can be done by calling into iSportsman by phone, by website, or using the kiosk at the VCC.

(6) When a permit is purchased, the user will also print off their FAPH iSportsman parking pass to be displayed in the window of your parked vehicle. You will not receive a daily parking pass. Game wardens, police, Range Operations, and wildlife biologist staff will be able to tell what area everyone is checked in to real time thus removing the need for parking area identification cards.

(7) There will be an iSportsman kiosk located at the Visitor Control Center (VCC) that can be used for those without home computer or Smartphone.

(8) On the FAPH iSportsman website there is a file that can be downloaded and filled out and emailed to the VCC to begin the annual background check process.

(9) You may also go by the VCC to complete the background check in person. Please call the Visitor Control Center at 804-633-8585 for hours of operation.

(10)) Once the VCC has approved the background investigation they will then activate your user profile on iSportsman.

(11)) Once your profile has been activated you are free to use this site using a home computer, tablet, Smartphone, or kiosk to purchase the appropriate permits (ex. FAPH Hunting Permit).

(12) If an iSportsman user fails to check out of their assigned area by the published return time as stated in the regulation, the iSportsman system will automatically place that user on administrative hold. The user will be unable to access the iSportsman system until the matter is resolved.

(13) There will no longer be a need to pick up or drop off cards at the Outdoor Recreation Building. Users are to check out to their areas by phone, smart phone, tablet, laptop, or kiosk and proceed directly to that area. Then users are to check out of the system when done and depart FAPH.

c. Locations:

(1) iSportsman Kiosk – Visitor Control Center (Bldg 13)

(2) Game Checking Station – Gazebo (Bldg 314) Anderson Camp

(3) Fish and Wildlife Branch – Anderson Camp (Bldg 308)

(4) FAPH iSportsman Website - https://faph.isportsman.net/

FAPH Fish and Wildlife Twitter account - @Fish_n_Wildlife

APPENDIX D
References

References and their updates are available on www.faph.isportsman.net:

a. APH Regulation 190-5 Traffic, 1 February 2012

b. CPL #19, Possessing, Transporting, Firing, and Storing Privately Owned Weapons (POW), 8 August 2012

c. APH Regulation 190-11, Prohibited Weapons/Items and Control of Privately Owned Firearms and Ammunition, 10 February 2006

d. AR 190-13, The Army Physical Security Program, 25 February 2011

e. The Archaeological Resources Protection Act of 1979

f. AR 200-1, Environmental Protection And Enhancement, 13 December 2007

g. Federal Gun Control Act of 1968, 22 October 1968

h. APH Regulation 200-1 Environmental Requirements, 30 November 2006

i. AR 350-19, The Army Sustainable Range Program, 30 August 2005.

j. 2016 Virginia Freshwater Fishing & Watercraft Owner's Guide, 1 January 2016

k. VDGIF Hunting and Trapping in Virginia July 2015 – June 2016

l. AR 190-11 Prohibited Weapons/Items and Control of Privately Owned Firearms and Ammunition, 10 February 2006

APPENDIX H – FORT A.P. HILL WATERSHED MANAGEMENT PLAN

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DOCUMENTATION CONTROL PAGE

Fort A.P. Hill – Environmental Management System

Environmental and Natural Resources Division
Directorate of Public Works
Fort A.P. Hill

Originating Office: DPW-ENRD		**Review Frequency:** Annually
Document Title: Watershed Management Plan, Fort A.P. Hill, Virginia **Document No:** AQUA-001-01		
Document Organization Owner: DPW – ENRD – Gef Fisher	**Prepared By:** EEE Consulting, Inc	**Revision Date:** February 2012
Contact Name: Gef Fisher	**Distribution:** Internal	**Original Date:** 2007

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Contact Name: Gef Fisher	**Distribution:** Internal	**Original Date:** 2007

Watershed Management Plan
Fort A.P. Hill, Virginia

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Executive Summary

This Watershed Management Plan (WMP) serves as an update to the United States Army (Army) Garrison Fort A.P. Hill (FAPH or the installation) 2007 WMP (FAPH 2007a). This updated WMP was prepared to comply with Federal, State, Local, Department of Defense (DoD), Army, and installation policy, regulations and plans. The 2007 WMP focused on establishing baseline watershed conditions including specific data on water quality, aquatic communities, and pollutant sources.

For this update, the Army elected to conduct and utilize two larger scale analyses of the FAPH watersheds that are mainly based on existing land use/cover and base activity information. The first analysis is a watershed inventory and vulnerability assessment. The first part of this analysis involved completing a Watershed Inventory for Vulnerability Assessment (WIVA), which is a Geographic Information Systems (GIS) based integration of specific natural watershed characteristics and land use/cover for the FAPH watersheds to develop a series of metrics or variables on the health and stresses affecting the watersheds. This inventory was then used to complete a vulnerability assessment of each FAPH watershed that generally followed the U.S. Environmental Protection Agency (EPA) Regional Vulnerability Assessment (ReVA) Program, which was developed to assess the regional vulnerability of ecosystems by indentifying and understanding potential stressors to ecological systems. ReVA was designed to help decision-makers use existing data and model results at a broad scale to identify and evaluate:

- Conditions within an area that have a measurable effect on the overall health of a ecosystem
- Where ecosystem problems currently exist or are likely to occur in the future
- Environmental stresses of concern
- Effect of various management decisions on the ecological resources

The second analysis is a Watershed Impact Assessment (WIA), as specified in The *Department of Defense Installation Watershed Impact Assessment Protocol* (DoD Protocol) (DoD 2005). This protocol provides installations with a series of spreadsheets to identify activities that occur within the installation and to assess the potential impact of those activities on water quality and other resources within the surrounding watershed. The WIVA/vulnerability assessment and WIA methods and results are presented in Section 5.0 and Section 6.0 for entire FAPH watershed. Appendix A of this document presents a more detailed presentation of the WIVA/vulnerability assessment and WIA results for each subwatershed at FAPH.

Both the WIVA/vulnerability assessment and DoD Protocol provide large scale analyses of the 13 FAPH watersheds. The WIVA produced 10 variables of watershed stressors/conditions that help characterize vulnerability of the watersheds to potential environmental change that may result from anthropogenic activities. The vulnerability assessment provided a comparative ranking of the FAPH watersheds that can be used to assess where additional land use controls such as stormwater BMPs may be best applied and to help future land management planning.

The watershed vulnerability results (rankings) closely follow the percent of range cover within each watershed. Watersheds with high range covers, such as Whites Lake and Portobago Creek, generally have the highest vulnerability ranking. The watersheds with the least amount of range cover, including Ware and Mount Creeks, Bowies Pond, and Meadow Creek were the least vulnerable. Although the Meadow Creek watershed has low slopes and erodible soils, the low ranking for this watershed is somewhat anomalous given the low percent forest cover and relatively high percent impervious cover, and Curve Number.

The DoD Protocol spreadsheets identified the most significant installation activities and highlighted FAPH compliance with relevant laws and regulations through its permits and environmental plans. The most common activities that received the highest scores (indicating highest potential impacts) within the 13 watersheds were:

- Filling and grading
- Gasoline, diesel, JP8 fuel points & POL training berms
- Construction sites
- Large arms impact areas
- Maintenance of Roads

Large arms impact areas only occur in the southern watersheds. The other four activities occur throughout the 13 watersheds.

Recommendations are provide to improve the scope and usefulness of the WIVA/Vulnerability Assessment and DoD WIA. Recommendations are also provided to prepare for the Chesapeake Bay Total Maximum Daily Load (TMDL) and Watershed Implementation Plan.

Watershed planning is an iterative, collaborative, and adaptive process requiring integration of multiple disciplines and programs that affect a watershed health and integrity. The installation's Integrated Natural Resource Management Plan (INRMP) is the basis for all natural resource management programs at FAPH. Once finalized, this Watershed Management Plan should be incorporated into the INRMP. This WMP concludes with several recommendations on improving and using the WMP to address the impaired waters on FAPH and future regulatory actions associated with the Chesapeake Bay TMDL and Watershed Implementation Plan.

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Acronyms and Abbreviations

Army	United States Army
BMP	best management practice
CBP	Chesapeake Bay Program
CBPA	Chesapeake Bay Preservation Area(s)
Census	U.S. Census Bureau
cfs	cubic feet per second
CN	Curve Number
DCR	Virginia Department of Conservation and Recreation
DEM	Digital Elevation Model
DEQ	Virginia Department of Environmental Quality
DGIF	Department of Game and Inland Fisheries
DHR	Virginia Department of Historic Resources
DO	Dissolved Oxygen
DoD	U.S. Department of Defense
DoD Protocol	*Department of Defense Installation Watershed Impact Assessment Protocol*
DOI	U.S. Department of the Interior
DPTMS	Directorate of Plans, Training, Mobilization, and Security
DPW	Directorate of Public Works
ENRD	Fort A.P. Hill Environmental and Natural Resources Division
EO	Executive Order
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
ESC	Erosion and Sediment Control Program
ESMP	Endangered Species Management Plan
FAPH	U.S. Army Garrison Fort A.P. Hill
GIS	Geographic Information Systems
gpd	gallons per day
HUC	Hydrologic Unit Code
INRMP	Integrated Natural Resource Management Plan
installation	U.S. Army Garrison Fort A.P. Hill
IR	Integrated Report
ITAM	Integrated Training Area Management
LID	Low Impact Development
LRAM	Land Rehabilitation and Maintenance
mg/L	milligrams per liter
MS4	Municipal Separate Storm Sewer Systems
msl	relative to mean sea level
NRCS	U.S. Department of Agriculture's Natural Resources Conservation Service

NWI	National Wetland Inventory
POL	Petroleum, Oil, and Lubricant
ReVA	Regional Vulnerability Assessment
Route 301	U.S. Route 301
RMA	Resource Management Area
RPA	Resource Protection Area
RRBC	Rappahannock River Basin Commission
SRP	Sustainable Range Program
SSURGO	Soil Survey Geographic Soils Database
STP	sewage treatment plant
SWPPP	Stormwater Pollution Prevention Plan
TABS	Total Activity Burden Score
TCF	The Conservation Fund
Temple	Temple University
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TPL	Trust for Public Lands
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
Virginia Tech	Virginia Polytechnic Institute and State University
VOF	Virginia Outdoors Foundation
VPA	Virginia Pollution Abatement System
VPDES	Virginia Pollutant Discharge Elimination System
WIA	Watershed Impact Assessment
WIVA	Watershed Inventory for Vulnerability Assessment
WMP	Watershed Management Plan

1.0 Introduction

This Watershed Management Plan (WMP) serves as an update to the United States Army (Army) Garrison Fort A.P. Hill (FAPH or the installation) 2007 WMP (FAPH 2007a). This updated WMP was prepared to comply with Federal, State, Local, Department of Defense (DoD), Army, and installation policy, regulations and plans. The 2007 WMP focused on establishing baseline watershed conditions including specific data on water quality, aquatic communities, and pollutant sources.

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The WIVA/vulnerability assessment and WIA methods and results are presented in Section 5.0 and Section 6.0 for entire FAPH watershed. Appendix A of this document presents a more detailed presentation of the WIVA/vulnerability assessment and WIA results for each subwatershed at FAPH.

1.1 Background

FAPH is located in northeastern Caroline County, Virginia, along U.S. Route 301 (Route 301), approximately 40 miles west of the Chesapeake Bay. A small portion of FAPH extends into eastern Essex County, Virginia. To the south and west, the installation is

bordered by forest, farmland, and the Town of Bowling Green. Forests, farmland, and the Town of Port Royal lie to the east and north (Figure 1).

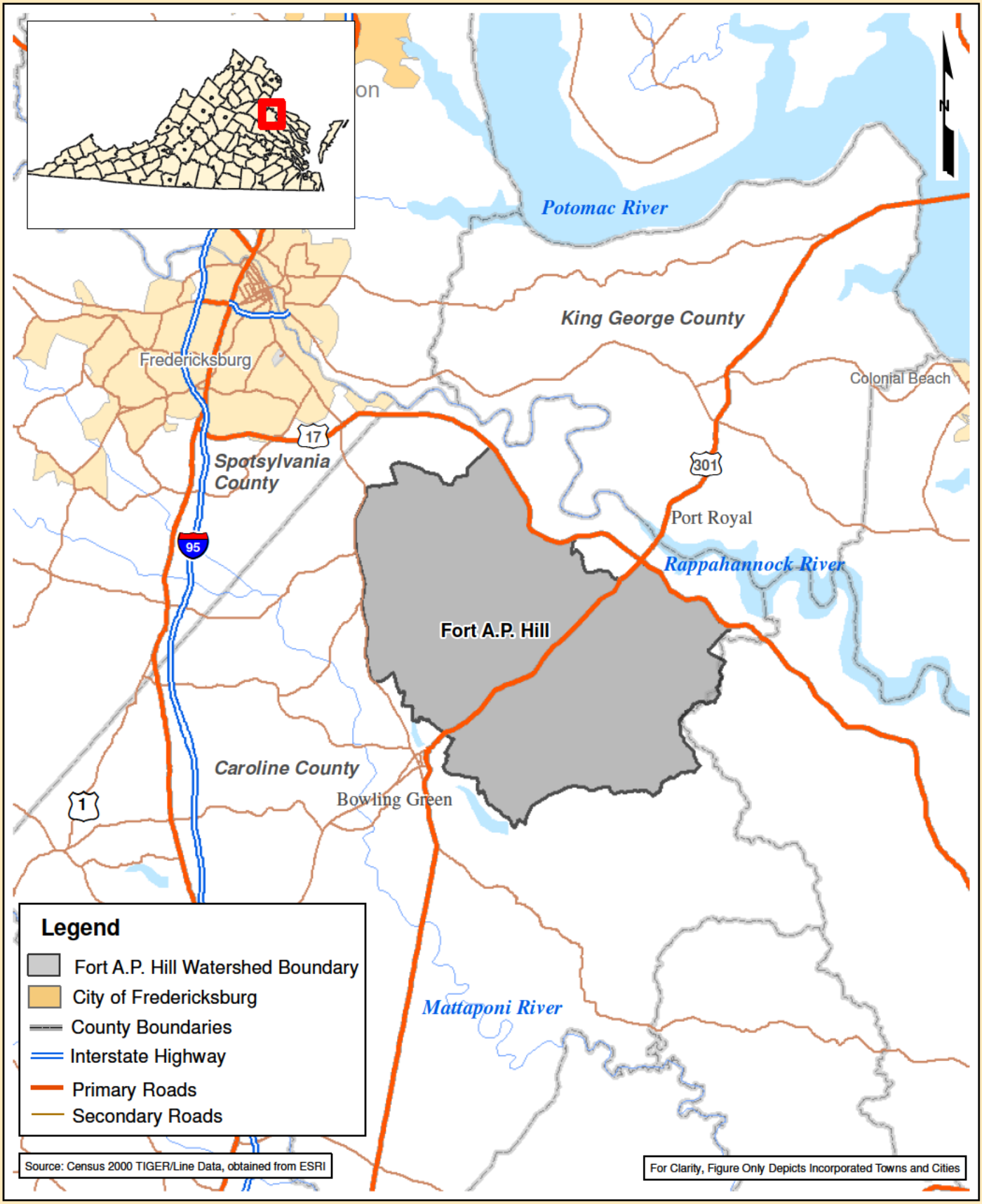
FAPH includes an estimated 75,794 acres (117 square miles) of land that are located within the Chesapeake Bay watershed. The Chesapeake Bay watershed is comprised of approximately 50 smaller watersheds, including the Rappahannock River and the York River watersheds that drain a large portion of central and eastern Virginia, including Caroline and Essex Counties.

FAPH is located along the drainage divide between the Rappahannock River watershed to the north and the Mattaponi/York River watershed to the south. Approximately two-thirds of the installation drains to the Rappahannock River and one-third drains to the Mattaponi River. Geographically, FAPH is located near the mid-point of the Rappahannock and York River watersheds. The Mattaponi River watershed drains approximately 913 square miles. The overall York River watershed includes an estimated 2,661 square miles. The Rappahannock River watershed contains an estimated 2,848 square miles.

Portions of eight-sixth order Hydrologic Unit Code (HUC) watersheds extend onto FAPH. These sixth order watersheds are the hydrologic units that the Virginia Department of Conservation and Recreation (DCR) and Virginia Department of Environmental Quality (DEQ) utilize under the state Water Quality Assessment Program mandated by Sections 305(b) and 303(d) of the Clean Water Act and the Virginia Water Quality Monitoring, Information and Restoration Act. DEQ also uses “assessment units” to designate stream or water body segments. In some cases, the sixth order watersheds and assessment units merge distinct sub-watersheds together. DEQ’s 2010 303(d) List of Impaired Waters (DEQ 2010) identified several impaired streams and one pond within the installation as impaired for one or more designated uses.

For this WMP, FAPH was further subdivided into 13 watersheds in order to provide a more refined analysis of the characteristics and potential vulnerability of distinct watersheds that occur on the installation. The 13 watersheds drain an estimated 74,649 acres of the 75,794 acres within the installation. The remaining 1,145 acres are divided into small areas throughout FAPH that drain into watersheds outside the installation.

For nearly its entire length, the FAPH installation boundary follows drainage or watershed divides. There are a few, very small areas along the installation perimeter that do not fall within one of the thirteen watersheds. Similarly, there are only a few very small areas outside of the installation boundary that occur within the 13 watersheds. Therefore, this analysis was deemed to be inclusive of the watersheds and activities within FAPH. Figure 2 and Table 1 presents the eight-sixth order HUC watersheds and the 13 watersheds within FAPH.



0 5 10 Miles

0 8 16 Kilometers

Site Location

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 1

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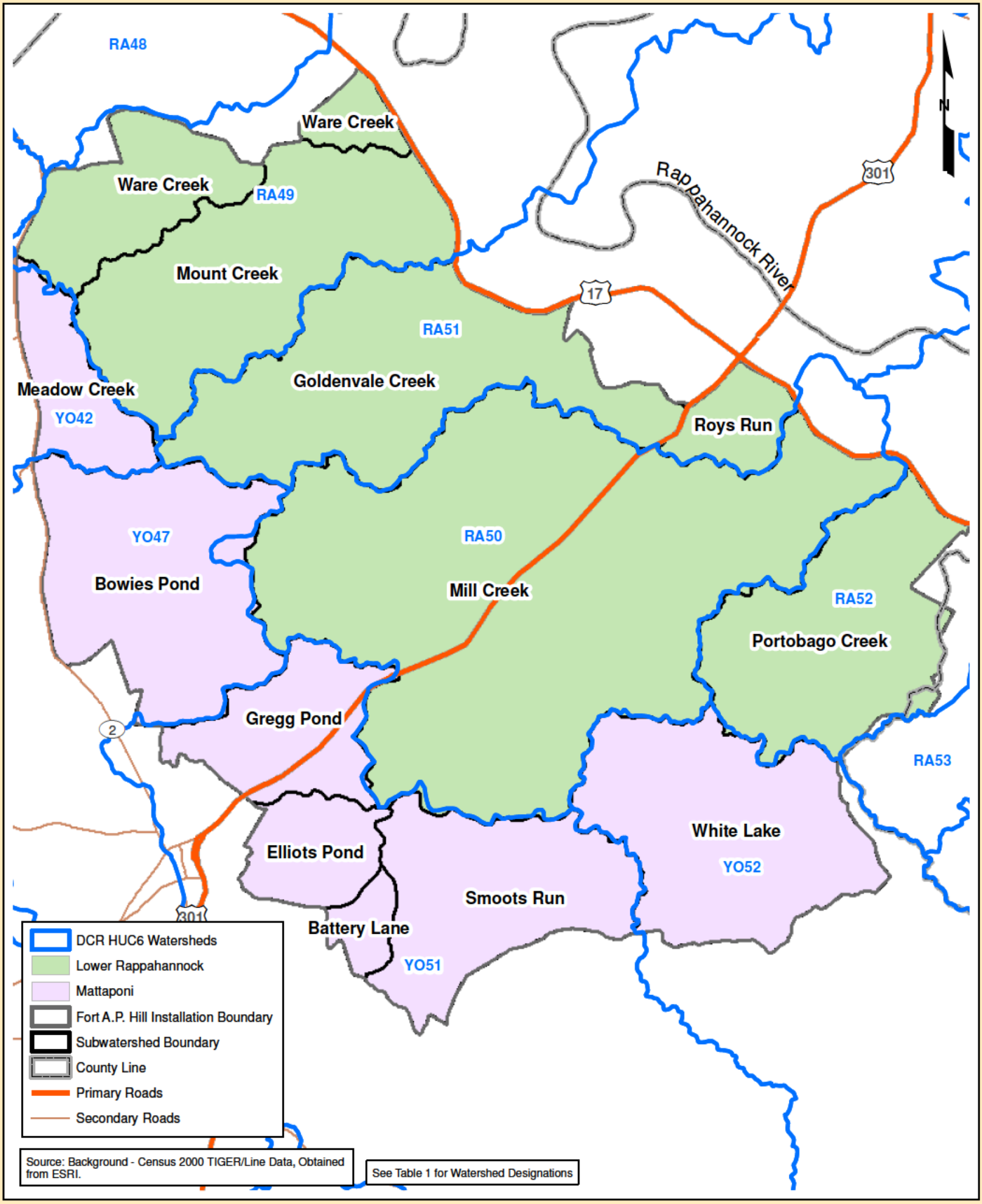

0 10,000 20,000 Feet

0 3,000 6,000 Meters

Watersheds and Subwatersheds

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 2

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Table 1: Watersheds at FAPH

Major Watershed	Sixth Order Watershed	VA HUC Code	Subwatershed	Watershed Area within FAPH (Acres)
Rappahannock River	Rappahannock River-Mount Creek	RA49	Ware Creek	3,857
			Mount Creek	7,509
	Mill Creek	RA50	Mill Creek	21,338
	Rappahannock River-Goldenvale Creek	RA51	Goldenvale Creek	8,370
			Roys Run	1,257
	Rappahannock River-Portobago Creek	RA52	Portobago Creek	6,199
York River	Poni River	YO42	Meadow Creek	2,079
	Mattaponi River-Campbell Creek	YO47	Bowies Pond	6,675
	Maracossic Creek-Jacks Creek	YO51	Gregg Pond	3,039
			Elliot's Pond	1,812
			Battery Lane	660
			Smoots Run	5,030
	Beverly Run	YO52	Whites Lake	6,824

1.2 Purpose and Goals of the Watershed Management Plan

As presented in Section 2.0, FAPH is required to comply with numerous federal and state laws and regulations for water quality. FAPH is also required to complete the DoD WIA Protocol (DoD 2005). In addition, the installation's Integrated Natural Resource Management Plan (INRMP) specified that a WMP be developed as a component of the overall natural resource management program for the installation.

Therefore, this WMP was prepared to:

- Assist FAPH in maintaining compliance with applicable laws and regulations, and DoD and installation plans and policies
- Provide a baseline vulnerability and impact assessment of the FAPH watersheds to identify and assess where watershed problems exist or are likely to occur in the future, and the environmental stresses of concern
- Implement an adaptive management strategy for watershed management.
- Provide a screening tool to evaluate the potential effect of various management decisions on the watershed resources and assist future planning in support of the FAPH mission to provide realistic joint and combined arms training, logistics, and support, enabling America's Defense Forces to win in the 21st Century operational environment.

2.0 Regulatory Environment

FAPH is required to comply with numerous federal and state laws and regulations addressing surface water quality and watershed management including:

- The Clean Water Act including Sections 303(d), 402, and 404
- Chesapeake Bay Total Maximum Daily Load (TMDL)
- Virginia State Water Control Law and Water Protection Permit Program
- Virginia Storm Water Management Program Regulation (4VAC50-60)
- Virginia Erosion and Sediment Control Regulation (4VAC30-50)
- Chesapeake Bay Preservation Act (1988) and Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC10-20)
- Executive Order (EO) 13508: Chesapeake Bay Protection and Restoration
- EO 13514: Federal Leadership in Environmental, Energy, and Economic Performance
- Chesapeake 2000 Agreement
- DoD and Army Chesapeake Bay Strategic Action Plans
- Energy Independence Security Act of 2007 Section 438 (Appendix B)
- Virginia Forestry's Best Management Practices for Water Quality

FAPH also is required to complete the DoD WIA Protocol (DoD 2005). In addition, the installation's INRMP specified that a WMP be developed as a component of the overall natural resource management program for the installation.

Under Section 303(d) of the Clean Water Act, states, territories, and authorized tribes are required to develop lists of impaired waters that do not meet water quality standards that states, territories, and authorized tribes have set for them, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for waters on the lists and, if warranted, develop TMDLs for these waters.

As presented in Section 3.6, DEQ has identified several impaired waters within and surrounding FAPH. FAPH has been working with DEQ to determine if these streams are actually impaired or threatened by anthropogenic activities, or whether the observed water quality values are the result of natural conditions. If natural conditions are causing the observed water quality, then water quality standards may be adjusted to account for the natural conditions.

In December 2010, the U.S. Environmental Protection Agency (EPA) issued the Chesapeake Bay TMDL (EPA 2010), the largest ever developed by EPA, identifies the necessary pollution reductions of nitrogen, phosphorus and sediment across Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia and sets pollution limits necessary to meet applicable water quality standards in the Chesapeake Bay watershed. Specifically, the TMDL sets watershed limits that require a 25 percent reduction in nitrogen, 24 percent reduction in phosphorus, and 20

percent reduction in sediment (EPA 2010). As a federally-managed land within the Chesapeake Bay watershed, FAPH must meet the goals established in this TMDL. The TMDL and its implications on FAPH are discussed in greater detail in Section 3.6.

Virginia implements the Chesapeake Bay Preservation Act through the Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC10-20). The purpose of these regulations is to protect and improve the water quality of the Chesapeake Bay, its tributaries, and other state waters by minimizing the effects of human activity to these waters. The regulations establish definitions and criteria for determining the location and extent of Chesapeake Bay Preservation Areas (CBPA) including Resource Management Areas (RMAs) and Resource Protection Areas (RPAs), criteria that local governments must use for granting, denying or modifying requests to rezone, subdivide, or to use and develop land in CBPA, and requirements for comprehensive plans, zoning ordinances, and subdivision ordinances to ensure that the use and development of land in CBPA is accomplished in a manner that protects the quality of state waters pursuant to the Act.

Executive Order (EO) 13508: Chesapeake Bay Protection and Restoration directs federal agencies to comply with relevant Chesapeake Bay regulations. The Chesapeake 2000 Agreement, the Army's Chesapeake Bay Strategy (Appendix C), the Army's Chesapeake Bay Action Plan (Appendix D), and the DoD and Army Chesapeake Bay Strategic Action Plan (Appendix E) further commit FAPH to taking part in and complying with the Chesapeake Bay TMDL and future efforts by Virginia to protect its Chesapeake Bay resources. FAPH has met these directives by adopting RPAs that are more expansive than Virginia's definitions (FAPH extends RPA designations to include intermittent streams and isolated wetlands due to biological importance) and establishing limitations and criteria for any disturbance in the RPAs. The analysis of effectiveness of the FAPH RPAs is outside the scope of this WMP; however, the efficacy of these buffers is measured in water quality sampling and other monitoring conducted at the installation, as well as some of the analysis presented in Section 6.0 and Appendix A of this document.

FAPH must also comply with Section 402 of the Clean Water Act, which established the National Pollutant Discharge Elimination System to limit pollutant discharges into streams, rivers, and bays. DEQ administers the program as the Virginia Pollutant Discharge Elimination System (VPDES), which permits all source discharges to surface waters. As discussed in Section 3.6, FAPH authorized contractor American Water O&M, Incorporated, holds a VPDES permit for Wilcox Sewage Treatment Plant, and a Virginia Pollution Abatement Permit for the Cooke Sewage Treatment Plant. FAPH holds an industrial stormwater VPDES for the Fortune Road Bulk Petroleum, Oil, and Lubrication (POL) facility.

DEQ and DCR oversee separate State programs that regulate the management of pollutants carried by storm water runoff. As presented above, DEQ regulates storm water discharges associated with "industrial activities" under Section 402 of the Clean Water Act. DCR regulates storm water discharges from construction sites, and from municipal separate storm sewer systems (MS4s), as presented below.

The Virginia Storm Water Management Program Regulation (4VAC50-60) manages the discharge of stormwater runoff from construction activities. Those discharges that are permitted by this program require the completion and approval of Stormwater Pollution Prevention Plan, as well as meeting the specific requirements of the permit. Construction projects within FAPH receive individual permits to address stormwater runoff. The impact of stormwater runoff is discussed in greater detail in Sections 3.6, Section 5.0, Section 6.0, and Appendix A of this document.

Virginia's Erosion and Sediment Control Regulations (4VAC30-50) are managed by DCR through the Erosion and Sediment Control Program (ESC). The ESC Program's goal is to control soil erosion, sedimentation, and nonagricultural runoff from regulated land-disturbing activities to prevent degradation of property and natural resources. The regulations specify standards, which include criteria, techniques and policies that must be followed on all regulated activities. State agencies must comply with erosion and sediment control requirements and have site specific plans developed in accordance with DCR's laws and regulations prior to commencing of land disturbing activities. FAPH also is required to comply with these regulations. This topic is addressed in greater detail in Section 3.6, Section 5.0, Section 6.0, and Appendix A of this document.

Among other things, EO 13514: Federal Leadership in Environmental, Energy, and Economic Performance directs federal agencies prioritize actions based on a full accounting of both economic and social benefits and costs. Such an approach is consistent with the Army's watershed-based management approach of FAPH resources. This WMP seeks to provide the information and tools necessary to make decisions that meet the goals of EO 13514.

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3.0 Conditions Affecting Watershed Health

FAPH is located in Caroline County, Virginia. Caroline County covers an estimated 540 square miles and has a total population of approximately 28,545 (Census 2011). FAPH, which is located in the northeast portion of the county, contains 75,794 acres or approximately 117 square miles.

The location of FAPH along the drainage divide between the Rappahannock River watershed to the north and the Mattaponi/York River watershed to the south generally limits most FAPH water bodies and watersheds from being impacted by pollutants from upstream sources. With a drainage area of 117 square miles, FAPH is a significant component or management area within the Rappahannock and York River watersheds.

FAPH, and the surrounding region, are located in the Atlantic Coastal Plain Physiographic Province. The topography of the Atlantic Coastal Plain is a terraced landscape that extends to the Atlantic Ocean and is dissected by major rivers. The terrain varies between rolling countryside to mostly level plains, interrupted by numerous shallow valleys. The elevations with the Atlantic Coastal Plain range from 60 to 300 feet relative to mean sea level (msl).

In order to gain an understanding of the issues surrounding the management of the FAPH watersheds, some background information on the watershed characteristics and conditions that affect watershed health is necessary. The following sections provide context to better understand the watershed system's functions.

3.1 Climate

FAPH is located in the transition zone between the northern and southern climates of the United States. The climate is classified as modified continental. Summers are warm and humid, with occasional hot and dry periods. Average temperatures range from 35 degrees Fahrenheit in January to 77 degrees Fahrenheit in July.

The average annual precipitation within FAPH is estimated at 38.25 inches. This precipitation is fairly evenly distributed throughout the year. In the winter months, precipitation often comes in the form of snow. Caroline County reports an average of 16.0 inches of snow a year (FAPH 2001, Caroline County 2010).

Annual prevailing winds within the region are generally from the south-southwest, except during the winter months when the wind blows from a northwesterly direction. Average surface wind speed is approximately 10 to 11 miles per hour. Severe weather conditions can result from tropical storms and hurricanes that, on occasion, produce strong winds and heavy rains with accompanying damage.

In terms of watershed health, climate influences the amount of precipitation that enters FAPH. Precipitation and wind conditions also influence the state of the other resources that contribute to watershed health, such as soil erodibility and vegetation conditions.

3.2 Topography, Geology, and Soils

Elevations within FAPH range from 10 feet msl along the Rappahannock River to 255 feet msl near State Route 2, and average 150 feet msl (FAPH 2009). Topographic relief is relatively low in the western portion of the installation, which is characterized by rolling hills. Relatively steep terrain occurs in the northeastern and southern installation areas, which are generally characterized by rolling to narrow uplands dissected by deep stream valleys.

The Coastal Plain is underlain by a wedge-shaped mass of semi-consolidated to unconsolidated sediments that thickens toward the ocean and rests on a surface of crystalline rock. The thickness of the sediments varies from zero feet at the Fall Line to approximately 10,000 feet along the coast of North Carolina. The thickness of these Cretaceous to Late Tertiary Age sediments at FAPH is approximately 400 to 500 feet. The sediments are poorly to semi-consolidated and consist of complexly interbedded lenses and layers of clay, silt, and sand, with minor amounts of lignite, gravel, and limestone. The sand, gravel, and limestone compose aquifers of varying extent. Some aquifers are traceable over long distances, whereas others are local. The sediments that compose the Coastal Plain Physiographic Province were deposited in nonmarine, marginal marine and marine environments. Throughout most of FAPH, fluvial sand and gravel deposits of the Late Tertiary Bacons Castle Formation occur at the ground surface in the upland areas between the drainages. These deposits are up to approximately 25 feet thick.

The physical and chemical properties of soils are largely dependent on the geologic parent material, and have a significant effect on watershed conditions, including vegetation density and composition, and watershed hydrology. The soils within FAPH can be classified into four groups: upland soils, valley slope soils, floodplain soils, and Rappahannock River terrace soils.

The upland soils are well-drained sandy soils that occur on gently rolling uplands with slopes ranging from 2 percent to 5 percent. Depth to groundwater within these soils is greater than 6 feet at high water. These soils have high permeability and low shrink-swell potential and are subject to severe erosion when cleared of vegetation, unless runoff is controlled. Representative soil types at the installation include Slagle-Kempsville and Kempsville-Emporia complexes. Upland soils comprise about 80 percent of the area included in the installation (FAPH 2001).

The valley slope soils are thick, moderate to well-drained loamy, gravelly sand and clay soils that occur on rolling to steep terrain. Slopes commonly vary from 5 percent to 15 percent, with a maximum range of 8 percent to 40 percent. Depth to groundwater within these soils is typically about 6 feet during high water. These soils have low permeability and high shrink-swell potential. Runoff is medium to rapid on these soils, and erosion is a significant concern where the soil is exposed. A representative soil of this type at the installation is Altavista.

The floodplain soils are deep, poorly drained sandy clay and silt that occur in narrow, nearly level areas of swamp, marshland, and along streams. These soils are derived from materials washed down from silty and sandy uplands. Depth to groundwater in these soils varies from 0 to 6 feet with high water. The soils have low permeability and moderate shrink-swell potential. Erosion is not usually a problem with these soils due to their nearly level orientation. Representative soil types at the installation are the Bibb and Chastain series.

The Rappahannock River terrace soils are found only in the northeastern portion of FAPH, in areas with minimal to no slope. The Rappahannock River alluvial floodplain and terrace deposits are deep, well-to poorly drained, clay loam deposits on broad and nearly level areas. In low areas these soils have a high water table. Depth to groundwater varies from 1 to 5 feet. Permeability varies considerably from high to low, and the shrink-swell potential is moderate. Runoff is slow on most of these soils, and erosion is not generally a problem due to gentle slopes. Representative soil of this type at the installation include the Altavista, Roanoke, and Wickham series (FAPH 2001)

3.3 Land Cover/Use and Facilities

3.3.1 Land Cover/Use

The current and projected mission of FAPH is to continue to provide outstanding training opportunities for DoD Forces with the potential for training mechanized and armor units. The ability of the installation to expand beyond current levels is determined by the existing assets and their ability to support the planned expansion. As indicated in the Real Property Master Plan, existing infrastructure is sufficient to support in excess of 12,500 training troops in barracks and tents, and has supported over 42,000 Boy Scouts and an additional daytime 150,000 visitors over a ten-day period. It is expected that the installation's mission will expand as a result of new training requirements, Army restructuring, and Base Realignment and Closure actions. Infrastructure, utilities, and communications upgrades will be initiated to manage the increased logistical support requirements (FAPH 2009).

The different categories of land cover at FAPH are illustrated on Figure 3. Several of these land uses are used in the analysis presented in Section 6.0 and Appendix A of this document. Specifically, the amount of RPAs, forest cover, range cover, impervious surfaces, and other anthropogenic activity are assessed. Land cover is also shown on the recent aerial imagery of the installation presented on Figure 4.

The illustration and measure of forest cover represents undeveloped lands and intact buffers that protect nearby by surface waters from stormwater runoff. Forests cover approximately 62,000 to 65,000 acres (85 percent) of the installation land area. FAPH encompasses three cover types; southern yellow pines, mixed hardwoods, and a mixed pine/hardwood cover type. Generally, a mix of southern pine and hardwoods occurs on the uplands, whereas nearly pure stands of hardwoods occur in the creek bottoms. As presented in the FAPH INRMP, the FAPH Forest Management Plan (FMP) and the

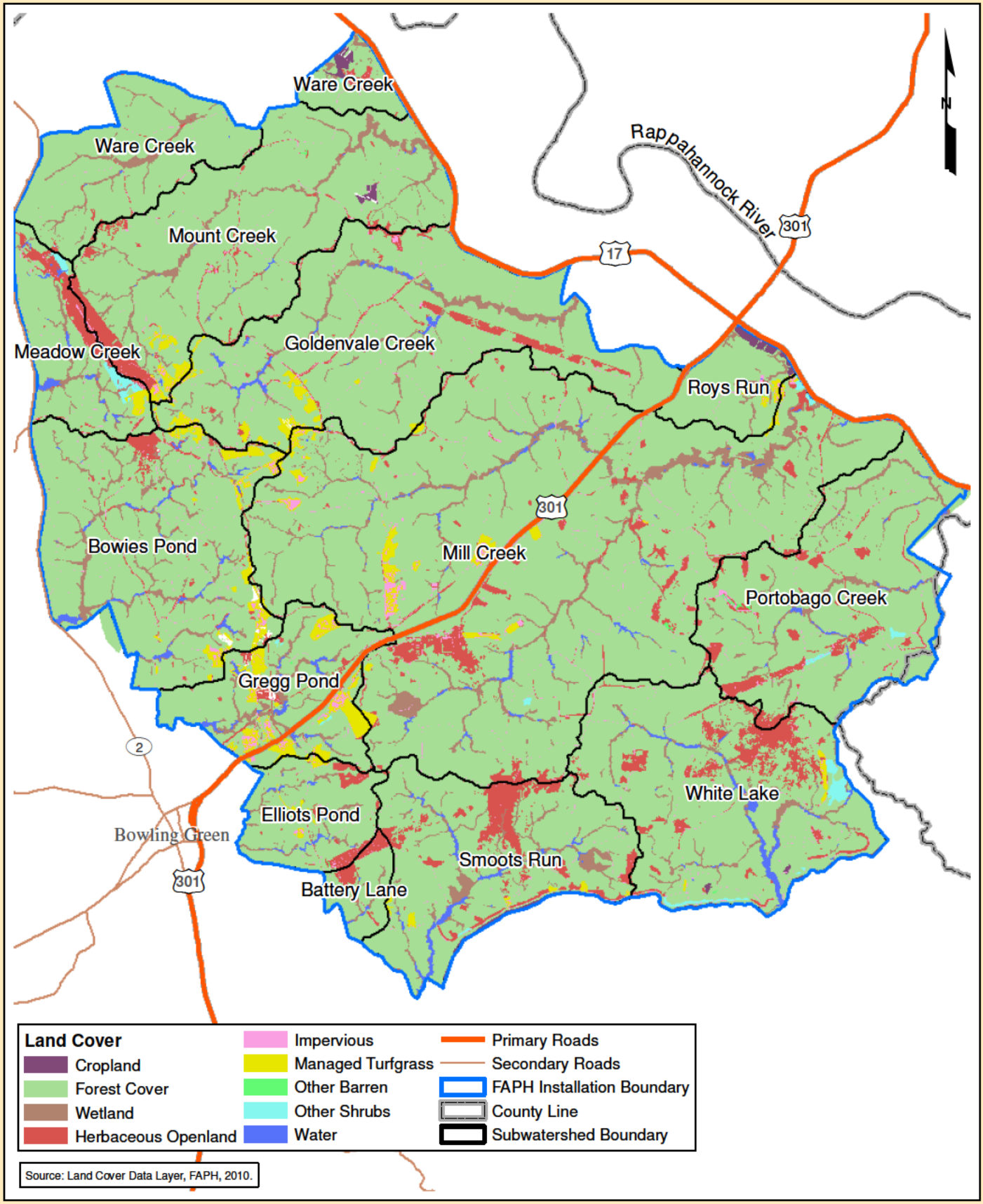
Strategic Forest Management Plan (SFMP) strive to provide a sustainable training resource and desired training setting as well as abundant timber, wildlife habitat, and recreation areas.

Anthropogenic activities result in varying levels of development and consist of activities that could contribute to point and nonpoint source pollution within the FAPH watersheds. One of the most notable anthropogenic activities within FAPH occurs at the various ranges. These ranges are not necessarily fully developed but include a wide range of impacts. The amount of anthropogenic activity and range cover varies by watershed and is discussed and analyzed in Section 5.0, Section 6.0, and Appendix A.

Developed areas within the FAPH watersheds have higher concentrations of impervious surface. The amount of impervious surface is an easily quantifiable indicator that correlates closely with increased pollutant runoff and the associated adverse impacts to water quality (Arnold and Gibbons 1996). The amount of impervious surface provides a good measure of potential watershed vulnerability and is discussed and analyzed in Section 5.0, Section 6.0, and Appendix A.

3.3.2 Facilities

Facilities within the FAPH watersheds consist of military training sites, offices, and support infrastructure, such as roads, trails, parking lots, utility lines, drainfields, water supply wells, and the wastewater treatment plants discussed below. In addition, there are numerous other facilities/sites within the installation including but not limited to wash racks, oil-water separators, closed landfills, and lagoons that effect water quality and watershed health. It is beyond the scope of this analysis to identify all these facilities/sites and their potential effect on watershed vulnerability. As discussed later in the document, the DoD Protocol identified many of these facilities/sites and qualified their potential impact, but did so at such a scale that it did not identify much variation between different facilities. These issues are discussed in greater detail in Section 5.0 and Section 6.0. Figure 5 illustrates some of the most relevant FAPH facilities, impervious cover, and ranges.



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Fort A.P. Hill Land Cover

Watershed Management Fort A.P. Hill Caroline County, Virginia

Figure 3

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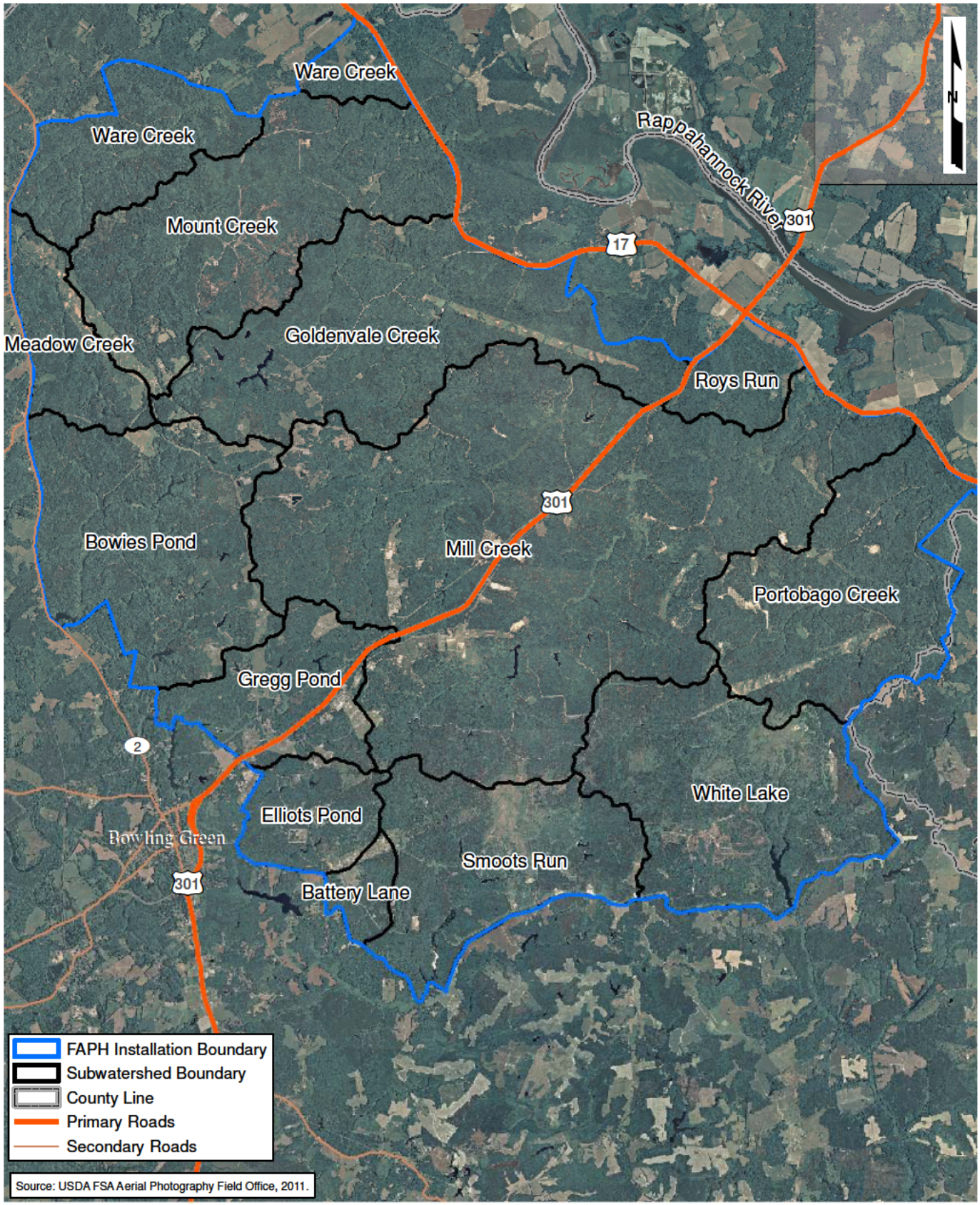

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Aerial Photograph

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 4

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Much of the developed portion of FAPH is serviced by wastewater treatment plants that are owned and operated by American Water O&M Inc. The Wilcox Sewage Treatment Plant (STP) and the Cooke STP are the two sewage facilities that service FAPH. The Wilcox STP has a designated capacity of 530,000 gallons per day (gpd) average, and a peak emergency capacity of 1,030,000 gpd. Discharge from the plant is permitted under the VPDES permit program (VPDES Permit No. VA 0032034). The Cooke STP is considered a land application system. Discharge is permitted under the Virginia Pollution Abatement (VPA) System (VPA Permit No. VPA00008). Three of the four permanent campsites, five of the seven tent campsites, and all of the installation buildings except the EP-4 area, Directorate of Plans, Training, Mobilization, and Security (DPTMS) and Directorate of Public Works (DPW) are served by the Wilcox STP. The Cooke STP serves the other permanent campsite within FAPH, Cooke Camp. Wastewater generated at the Cooke Camp flows into two oxidation lagoons. Effluent from the lagoon flows into a chlorine contact tank for disinfection. Final effluent from the contact tank is spray-irrigated onto adjacent fields. The two tent campsites not connected with the wastewater treatment facilities, Pender and Rappahannock, use septic tanks and drain fields for sewage, kitchen, and shower waste disposal. The DPTMS complex also uses septic tanks. The field training areas and temporary field campsites are not connected to the STPs. These areas use holding tanks and field latrines (FAPH 2009).

DEQ also issues VPDES permits for stormwater discharges from industrial activities. FAPH holds VPDES Permit Number VAR051092 for the Fortune Road Bulk POL facility. Other locations where petroleum products are managed are identified in the Stormwater Pollution Prevention Plan (SWPPP) for the POL facility (FAPH 2011).

3.4 Air Quality

Caroline County is an attainment area for all Federal and State air quality standards (EPA 2011). At FAPH, there are minor air emissions from heating equipment, building and equipment maintenance activity, weapons firing, aircraft, other training activities, generators and other fuel burning equipment, and vehicle operation. The installation currently has an air quality State operating permit for all regulated emissions. The most recent emission data at the installation were collected in 2010 (Table 2). These conditions are further documented in the installation's Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II Emissions Reporting (FAPH 2010).

Table 2: Fort A.P. Hill Emission Data for 2010

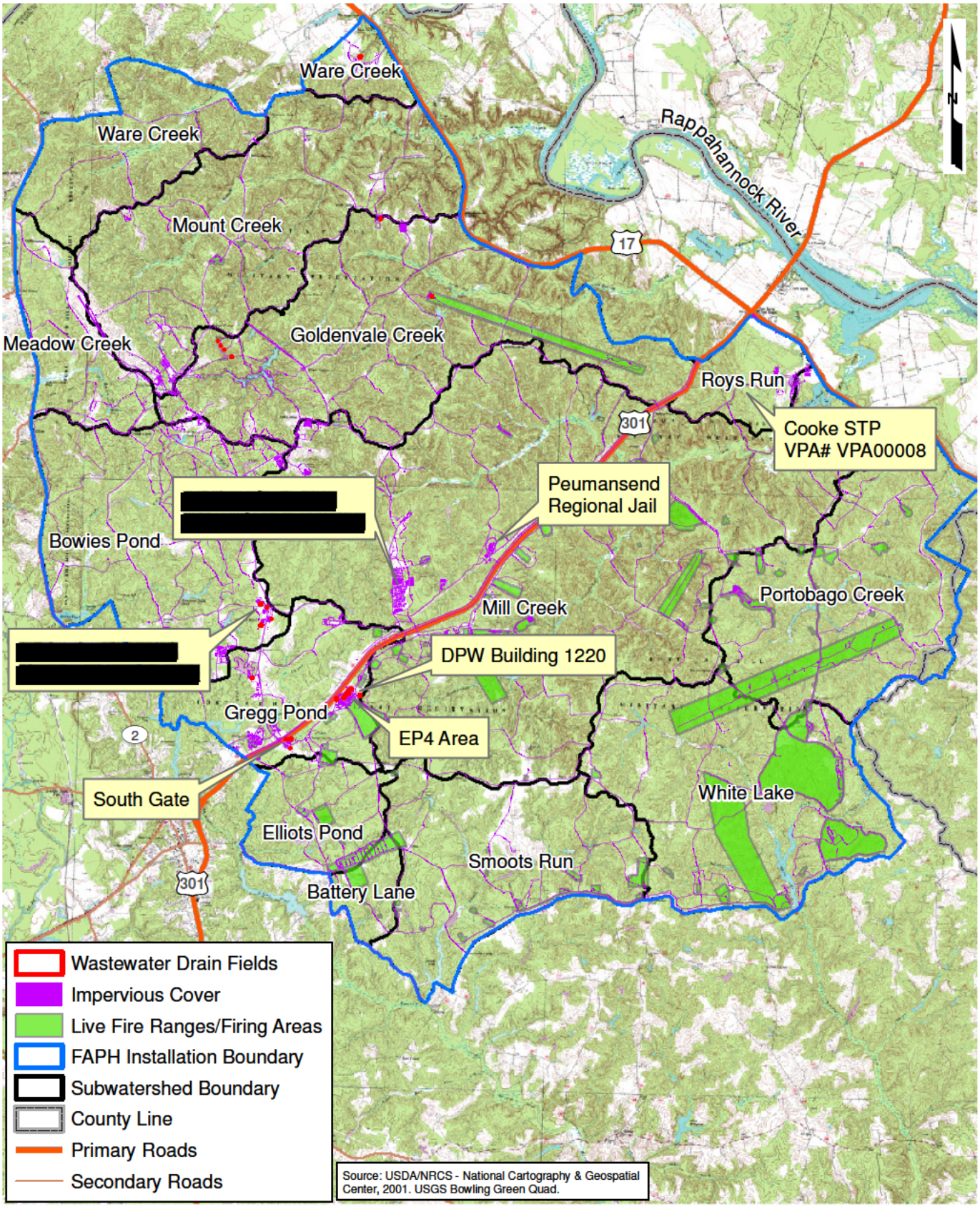
Pollutant	Emission (in tons/year)
Volatile organic compounds	2.45
Nitrogen oxides	2.75
Sulfur oxides	0.69
Particulate matter	0.16
Carbon monoxide	0.67

Source: Army data

In addition to these emissions, activities at Fort A.P. Hill also result in smoke and particulates being released into the air. Smoke is produced from some training exercises as well as natural and manmade fires.

In terms of watershed health, air quality has a direct effect on water quality and vegetation health. Air borne pollutants, including nutrients such as nitrogen and toxics such as mercury, can be transferred to the ground and surface water through direct (dry) deposition and wet deposition during precipitation events. This process of air deposition has been determined to be a major source of pollution to surface water bodies including the Chesapeake Bay.

It is highly unlikely that the small FAPH air emissions have a localized effect on watershed health. Regional air quality should affect the FAPH watersheds equally and may be a significant factor in the chemical composition of FAPH surface water bodies. Therefore, FAPH air emissions and air quality do not provide a good variable for assessing the relative vulnerability or potential impacts to FAPH watersheds. Additional information on the potential effects of air quality on watershed health was presented in the 2007 WMP.



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Wastewater Management Facilities, Impervious Cover, and Ranges

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 5

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3.5 Ecology

Most of Virginia is covered by a temperate broadleaf deciduous forest that is divided into four basic types: mixed mesophytic, oak-chestnut, oak-pine, and southeastern evergreen forests. Approximately 85 percent of FAPH is forested, with equal amounts of coniferous, deciduous, and mixed coniferous-deciduous forests. Loblolly pine (*Pinus taeda*) and Virginia pine (*Pinus virginiana*) are the dominant conifer species and white oaks (*Quercus alba*), red oaks (*Quercus rubra*), and tulip-poplar (*Liriodendron tulipifera*) are the most dominant hardwoods.

In addition to forest cover, grassland vegetation represents approximately 10 percent (7,500 acres) of FAPH. The installation's Grassland and Open Areas Management Plan provides characterization and management of grasslands (FAPH 2009). These plans and other details of the flora within the FAPH watersheds are addressed in the INRMP and other FAPH documents (FAPH 2007a, 2007b).

A healthy watershed also provides suitable habitat for the wide range of wildlife that are known to exist in and around FAPH. Maintaining healthy conditions allows the Army to meet its natural resource objectives and comply with state and federal laws that protect rare, threatened, and endangered species. Information on these species is documented in the INRMP and other FAPH documents (FAPH 2007a, 2007b).

3.5.1 Special Status Species

3.5.1.1 Flora

Information obtained from DCR's Natural Heritage Database indicates that there are four threatened and endangered plant species within Caroline County (DCR 2011a). Table 3 lists these species and provides their designation.

Table 3: Special Status Plant Species within FAPH

Common Name	Scientific Name	Status
American ginseng	*Panax quinquefolius*	state-endangered
New Jersey rush	*Juncus caesariensis*	state-threatened
small whorled pogonia	*Isotria medeoloides*	federally-threatened state-endangered
swamp pink	*Helonias bullata*	federally-threatened state-endangered

Source: DCR 2010

All four of these species have been identified within FAPH (FAPH 2009). FAPH has Endangered Species Management Plans (ESMP) for the federally threatened small whorled pogonia (*Isotria medeoloides*) and swamp-pink (*Helonius bullata*). A bald eagle (*Haliaeetus leucocephalus*) management plan is maintained by FAPH since it was delisted at the federal level in 2007, but remains protected under *The Bald and Golden*

Eagle Protection Act. The bald eagle is still a state-listed threatened species. An ESMP provides general and site-specific management guidelines, and establish protocols for conservation, monitoring, and education of appropriate installation personnel. FAPH is in the process of updating the ESMP to include American ginseng and New Jersey rush.

3.5.1.2 Fauna

The Virginia Department of Game and Inland Fisheries (DGIF) Fish and Wildlife Information Service notes the presence of up to 381 different fish and wildlife species occurring within or close to FAPH (DGIF 2010). Of these species, ten are either Tier I species or have a federal or state status. Three of the ten species known to exist within close proximity to FAPH that have been confirmed (FAPH 2009) within the installation are listed in Table 4.

Table 4: Special Status Wildlife Species within FAPH

Common Name	Scientific Name	Status
Bachman's sparrow	*Aimophila aestialis*	State-threatened Tier I
Bald eagle	*Haliaeetus leucocephalus*	State-threatened
Tidewater amphipod	*Stygobromus indentatus*	Federal Species of Concern State Species of Concern

FAPH 2009

3.6 Water Resources

3.6.1 Surface Water

The major streams within FAPH that drain to the Mattaponi (HUC 02080105)/York River (HUC 02080107) and Rappahannock River (HUC 02080104) watersheds are listed in Table 5 and Table 6, respectively, and illustrated on Figure 6. The streams shown on Figure 6 are the intermittent and perennial streams on the installation currently included the FAPH stream centerline data set and are based on the National Hydrologic Data. FAPH is in the process of updating this GIS layer to more accurately identify the FAPH stream network.

None of the streams located within FAPH are classified as Wild and Scenic Rivers by the Department of the Interior (DOI 2011) or included in Virginia's Scenic Rivers Program (DCR 2011b). The 2007 WMP provides more in-depth information on the geometry and flow of these streams.

FAPH contains numerous manmade lakes and ponds with a surface area totaling more than 630 acres. In addition, essentially all of the watersheds contain multiple beaver ponds and other small natural impoundments. The largest lakes and ponds within the watershed are listed in Table 7.

FAPH also has 31 Best Management Practice (BMP) stormwater facilities/structures that have been constructed to manage stormwater runoff from many of the installation facilities in accordance with the Virginia Storm Water Management Program Regulation (4VAC50-60), and Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC10-20). A preliminary database was recently completed to provide an inventory and initial assessment of the BMPs. The BMPs include extended detention basins, infiltration basins, bioretention structures (rain gardens), permeable pavers, and other Low Impact Development (LID) stormwater practices. The BMP database is currently insufficient to be included in the watershed vulnerability and impact assessment presented in this WMP, but should be included in future WMP once additional data on the areal coverage and efficacy of the BMPs are established.

Table 5: Major Streams in FAPH that Drain into the Mattaponi River Watershed

Stream	Length Within FAPH (feet)
Meadow Creek	16,549
Turkey Track Creek	32,806
Cattle Creek	13,198
Reynolds Run	7,926
Maracossic Creek	17,760
Smoots Run	14,686
Beverly Run	11,008
Mashbox Run (Beverly Run tributary)	6,691
Shady Grove Run (Beverly Run tributary)	9,186
Portage Run (Beverly Run tributary)	2,132

Source: FAPH GIS Data

Table 6: Major Streams in FAPH that Drain into the Rappahannock River Watershed

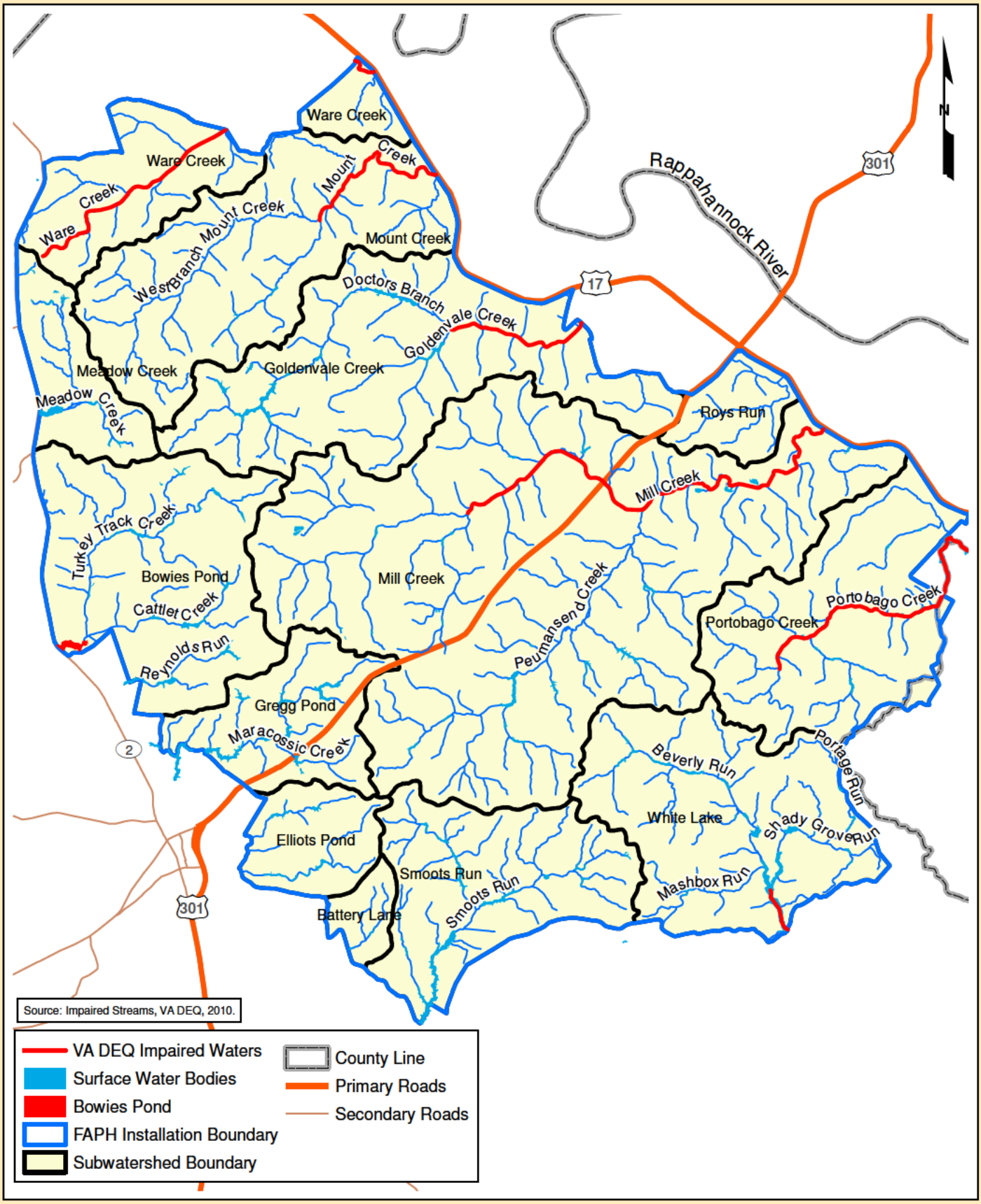
Stream	Length Within FAPH (feet)
Ware Creek	34,540
Mount Creek	32,124
West Branch (Mount Creek tributary)	35,084
Goldenvale Creek	5,830
Peumansend Creek	67,202
Portobago Creek	20,302
Mill Creek	88,227

Source: FAPH GIS Data

Table 7: Managed and Other Significant Impoundments

Impoundment Name	Location	Surface Area (acres)	Watershed
Beaver Dam	TA 1	8.9	Gregg Pond
Bowies	TA 6	29.7	Bowies Pond
Bullocks	Wildlife Refuge	7.7	Goldenvale Creek
Buzzards Roost	TA 1	13.5	Bowies Pond
Dirt Bridge	TA 22	3.6	Bowies Pond
Engineer	Wildlife Refuge	3.7	Goldenvale Creek
Fish Hook	TA 22	5.0	Bowies Pond
Hamilton	Impact Area	3.6	Smoots Run
Herns	TA 20	4.7	Mill Creek
Holmes	Impact Area	4.3	Whites Lake
Jordans Crossing	TA 7	5.3	Meadow Creek
Laser Range	TA 19	10.8	Goldenvale Creek
Locklerr Pond	Impact Area	12.6	Mill Creek
Lonesome Gulch	TA 3	2.9	Bowies Pond
Lower Travis	Wildlife Refuge	15.4	Goldenvale Creek
Lunker Hole	TA 5	10.0	Goldenvale Creek
Maxey Gregg	TA 1	27.0	Gregg Pond
Meadow Creek	TA 7	27.0	Meadow Creek
Purple Heart Pond	CA 1	4.4	Mill Creek
Reynolds Run	TA 2	11.9	Bowies Pond
Smoots	CA 11/12	45.0	Smoots Run
Upper Delos	CA 1	18.1	Mill Creek
Upper Travis	Wildlife Refuge	22.0	Goldenvale Creek
Warrior Pond	CA 1	4.7	Mill Creek
Whites	CA 16/17	71.3	Whites Lake

Source: FAPH data



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Surface Water Resources

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 6

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3.6.2 Groundwater

The hydrogeologic framework of the Virginia Coastal Plain consists of multiple confined aquifers and confining units, and a water table aquifer system. Major boundaries for the Coastal Plain are the Fall Line to the west and the fresh water/salt water interface in the Chesapeake Bay and Atlantic Ocean to the east. Groundwater flow is regionally to the east and locally to the surface water bodies that intersect the various aquifers. Most recharge of the Coastal Plain groundwater system occurs in the aquifer outcrop zones near the Fall Line, where precipitation and surface water can infiltrate into unconfined and confined aquifers. Regionally, vertical leakage through confining units to underlying confined aquifers is an important mechanism for groundwater recharge (FAPH 2007b).

Groundwater occurs under varying hydrogeologic conditions throughout the installation. Groundwater discharges to all the perennial and intermittent streams on the installation and comprise what is typically referred to as base flow. The headwaters of most streams on the installation are formed where groundwater discharges to the surface in the form of seeps and springs. These discharges commonly create wetlands that are locally referred to as seepage swamps. The location and quality of these seepage swamps plays an important role in supporting some of the unique vegetation within FAPH, especially the federally threatened swamp pink.

The quality of groundwater is determined by the chemical properties of the incident precipitation, the geochemical properties of the rock and soil material through which it passes, and the residence time of the groundwater in the subsurface. Groundwater quality can be affected by man-made sources of pollution such as leaking underground storage tanks, landfills, and wastewater lagoons, that can contribute pollutants directly to the groundwater or by pollutants introduced to surface water runoff that may infiltrate into the groundwater system downgradient of the pollution source.

Surface water quality within most watersheds is strongly influenced by the quantity and quality of groundwater, particularly during periods of low precipitation when most or all surface water flow is due to groundwater discharge. Evaluating the affect of groundwater quality on surface water quality and watershed health is beyond the scope of this project but should be addressed in the assessment of the 303(d) impaired waters.

[redacted]

3.6.3 Surface Water Quality

DEQ is responsible for monitoring and managing water quality within Virginia. Monitoring is designed to determine compliance with federal and state water quality standards and permit effluent limits, assess the health of aquatic habitats and watersheds, and to develop watershed and surface water management programs including the development and assessment of TMDLs. In the 2010 305(b)/303(d) Water Quality

Integrated Report (IR), DEQ lists portions of the York, Rappahannock, and Mattaponi Rivers as impaired. . The report also specifically identifies eight impairments for waters within FAPH as impaired for one or more designated uses.

The following water bodies were identified in the 2010 IR as impaired for the aquatic life use due to either pH or dissolved oxygen (DO) excursions:

- Beverly Run (VAN-F22R_BEV02A08, pH)
- Ware Creek (VAN-E21R_WAE01A08, pH),
- Goldenvale Creek (VAN-E21R_GLL01A08, dissolved oxygen and pH)
- Portobago Creek (VAN-E21R_PBC01A10, dissolved oxygen)
- Mill Creek (VAN-E21R_MIC01A08, pH)
- Mount Creek (VAN-E21R_MTC01A08, pH).

The aquatic life use impairment in each of the above water bodies was identified in the 2010 IR as possibly caused by a natural condition. A Natural Condition Assessment will be performed by DEQ's Northern Regional Office to determine if the cause of the impairments are due to the natural environment or whether a TMDL must be developed due to anthropogenic effects.

The following segments were identified as impaired for the recreation use due to *E. coli*:

- Ware Creek (VAN-E21R_WAE01A08)
- Mill Creek (VAN-E21R_MIC01A08)
- Mount Creek (VAN-E21R_MTC01A08)
- Portobago Creek (VAN-E21R_PBC01A10)

Ware, Mill, and Mount Creeks were included in the downstream bacteria TMDL for the Tidal Freshwater Rappahannock River that was approved by EPA on May 5, 2008, and therefore does not require a new TMDL. The TMDL identified the bacteria sources as on-site treatment systems, pet waste, waterfowl, wildlife, livestock, and urban runoff. Portobago Creek (VAN-E21R_PBC01A10) was not included in Tidal Freshwater Rappahannock River bacteria TMDL and requires a TMDL.

Bowies Pond (VAN-F17L_CAM01A06) is listed in the 2010 IR as impaired for the fish consumption use due to mercury in fish tissue. DEQ recognizes atmospheric deposition as a possible source of mercury, particularly in lakes and low gradient streams, and that additional study into the sources of mercury is needed, either for developing a mercury TMDL for Bowies Pond or for developing a statewide comprehensive mercury program.

DEQ reported six excursions above the fish tissue screening value of 270 ppb for arsenic in five species of fish sampled from Bowies Pond in 2005. Arsenic is noted as an observed effect for the fish consumption use, as Virginia does not have a water quality criterion for arsenic.

Mill Creek (VAN-E21R_MIC02A06) is also listed in the 2010 Water Quality Integrated Report as not supporting the aquatic life use due to an impaired benthic macroinvertebrate community.

Water quality monitoring within these streams and surrounding water bodies is maintained by the Army, DEQ, and other agencies and organizations. These sampling efforts are documented in several FAPH documents (FAPH 2007a, 2007b) and other agencies' documents. EEE understands that FAPH may submit the installation's monitoring data to DEQ to be used in the impairment designation and cause of the impairments.

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4.0 Stakeholders

Stakeholders are individuals or groups who may impact or be affected, either directly or indirectly, by the health and condition of the watershed. Stakeholders also include the individuals or groups whose actions directly or indirectly impact the health of the watershed. Therefore, the inclusion of stakeholders in the watershed management planning process is an important step towards a successful plan.

For the purposes of this WMP, stakeholders are divided into the six Directorates that exist at FAPH. The Garrison Commander also is included in this discussion, along with the other groups that operate within the watershed. This chapter also includes a brief discussion of the other watershed management organizations that exist within the Rappahannock River and York River watersheds.

Communities outside of FAPH were not considered to be stakeholders for this WMP. There are only a few, small areas located outside FAPH that are within the FAPH watersheds. The appropriate means of involving interested parties outside of the FAPH watersheds is through outreach and education efforts, as well as working with other research and watershed groups described later in this section of the document.

4.1 Stakeholder Involvement

The planning process for this WMP included a number of opportunities for different stakeholders to contribute. A kick-off meeting was held on October 7, 2010 at the DPW offices. Meeting attendees included staff from DPW Fort A.P. Hill Environmental and Natural Resources Division (ENRD) and their consultants. During the meeting, the different offices within ENRD were briefed on the proposed plan and invited to provide their input on what the plan should address.

Beginning in early 2011, representatives from the ENRD, FAPH Forestry, Master Planning, and other offices formed a working group to complete the spreadsheets required in the DoD Protocol (See Section 5.0, Section 6.0, and Appendix A of this document). This process provided additional stakeholder input into the WMP. The meetings also allowed the different individuals and offices to become more familiar with other programs being conducted within FAPH. This interdisciplinary approach was a great benefit to the planning process and will continue to benefit the FAPH watersheds as the plan is implemented.

In February 2012, the draft WMP was circulated through the various stakeholders' offices for review and input. Input received during this review process was incorporated into the final Fort A.P. Hill WMP. This interdisciplinary approach allows for the most well-rounded management document and raises awareness of watershed issues.

4.2 Installation Stakeholders

4.2.1 Garrison Commander

FAPH Garrison Commander has responsibility for the overall management of the installation's facilities and for successfully carrying out its mission. To fulfill the environmental stewardship component of the Army's mission at FAPH, which includes watershed management, the Garrison Commander ensures that the installation has the funding, staff, and other resources necessary to implement the goals and objectives of this plan.

4.2.2 The Directorate of Public Works

DPW ENRD is responsible for most environmental programs on the installation, including fish and wildlife management, water quality protection, and compliance with the relevant environmental laws and regulations. All of these activities contribute to watershed health and highlight the need for a watershed-based approach to resource management within the installation. The development of this WMP was informed by the resource monitoring and evaluation conducted by the ENRD.

The DPW also includes the installation's natural resource management, housing, engineering, operations and maintenance, and master planning divisions. These divisions are responsible for much of the development and maintenance of facilities within FAPH. The implementation of the goals and objectives established in this plan will largely be the responsibility of the DPW. The success of these goals and objectives will allow the DPW to advance the Army's conservation goals and objectives.

Four programs directly associated with ENRD's watershed management are the Land Rehabilitation and Maintenance (LRAM), Forest Management, Aquatic Resources Management, and Stormwater Management groups. LRAM is a component program of the Integrated Training Area Management (ITAM) program which in turn is part of the Army's Sustainable Range Program (SRP). The goal of the SRP is to ensure the long-term viability of ranges and training lands to meet the national defense mission. ITAM supports this mission be sustaining the capability of installation training and testing lands to support specific military training missions. LRAM activities include improving the capabilities of an existing site to better support military training requirements (e.g., vegetation control), offsetting environmental impacts from military training activities (e.g. maneuver damage resulting in localized rutting, or loss of groundcover), and changing the site conditions to decrease the frequency or extent of environmental impacts. Management techniques may include re-vegetation, erosion and sediment control, and stormwater management. Within the FAPH watersheds, these efforts are focused on identifying eroded soils and preventing soil erosion. The purpose of these efforts is to reduce the impact of erosion on water quality and wildlife habitat (FAPH 2009).

4.2.3 Other Directorates

The other Directorates within FAPH assist ENRD in planning or carrying out natural resource management and enforcement actions and/or have missions that are directly affected by the health of the FAPH watersheds. Implementation of this plan will rely on these other Directorates incorporating watershed management goals and objectives into their actions at the installation and to continue to coordinate with the ENRD. The success of these goals and objectives will help create a safer and healthier natural environment in which to operate.

In addition, FAPH is home to at least ten tenant DoD organizations. These organizations use FAPH for training purposes and often locate personnel at the installation for an extended period of time. Like the other Directorates mentioned above, these organizations play a role in the health of the FAPH watersheds and will be key players in the future management of these resources.

4.3 Other Stakeholders

4.3.1 Resource Protection Agencies and Groups

Other stakeholders relevant to this WMP include numerous federal and state agencies that hold a regulatory purview over the activities within FAPH, are involved in resource management and monitoring activities, and work with the installation for the successful implementation of many of its natural resource and outdoor recreation plans. Regulatory agencies include the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE), the EPA, DGIF, DEQ, DCR, and the Virginia Department of Historic Resources (DHR). A number of these agencies, including DCR, DEQ, USFWS, and EPA, have special interest in the FAPH watersheds, as the health of the natural resources within these systems fall within the agencies' purviews.

Other partners include the Chesapeake Bay Program (CBP), Virginia Polytechnic Institute and State University (Virginia Tech), The Nature Conservancy (TNC), The Trust for Public Lands (TPL), The Conservation Fund (TCF), and the Virginia Outdoor Foundation (VOF). Implementation of this WMP will require the continued technical assistance in natural resource planning and implementation from these agencies and groups. The success of the plan's goals and objectives will meet the regulations and policies these agencies and groups enforce or strive to achieve.

4.3.2 Other Watershed Groups

In addition to the groups actively involved in watershed management at FAPH, a number of non-profit groups and other organizations in the region play important roles in watershed science, education, and improving conditions within the larger watersheds. One such organization is the CBP, the regional partnership in charge of directing and conducting restoration efforts of the Chesapeake Bay. This organization combines the resources of various state and federal agencies, academic groups, and local watershed

organizations to further policy goals supporting Chesapeake Bay restoration. The DoD is one of the federal agency partners involved in Chesapeake Bay Program activities. The CBP is active in Virginia, Maryland, and Pennsylvania (CBP 2011).
The Rappahannock River Basin Commission (RRBC) is another organization actively involved in improving conditions within the larger watershed in which FAPH is located. The RRBC is responsible for providing a forum for governments and citizens to come together to discuss issues affecting water quality and other environmental issues in the river basin (RRBC 2011).

A database of other organizations active within the subject watershed is available on the EPA's website at http://water.epa.gov/action/adopt/network.cfm.

5.0 Watershed Vulnerability and Impact Assessment Methodology

To complete the Fort A.P. Hill WMP, the Army selected two forms of analysis; the GIS-based WIVA/Vulnerability Assessment, and the DoD Protocol (DoD 2005). The following analyses address the 13 watersheds that are located within FAPH. It is beyond the scope of this document and the purview of the Army at FAPH to conduct such analysis of the portions of the watersheds that extend beyond the installation boundaries, or the small areas on the installation that drain offsite outside of the these 13 watersheds.

5.1 Vulnerability Inventory and Assessment

The FAPH WMP includes both an inventory of watershed conditions, and an assessment of watershed vulnerability based on the watershed conditions and recent and near future forestry management practices and FAPH mission related projects. The vulnerability assessment is based on EPA's Regional Vulnerability Assessment (ReVA) Program that was developed to assess the regional vulnerability of ecosystems by indentifying and understanding potential stressors to ecological systems. ReVA was designed to help decision-makers use existing data and model results at a broad scale to identify and evaluate:

- Conditions within an area that have a measurable effect on the overall health of a ecosystem
- Where ecosystem problems currently exist or are likely to occur in the future
- Environmental stresses of concern
- Effect of various management decisions on the ecological resources

This information can then be used to make better informed decisions on activities that may affect the ecosystem and the likely implication of those decisions. This program makes extensive use of regional-scale, spatially explicit information on the extent and distribution of environmental stressors and sensitive resources.

5.1.1 Watershed Inventory

The Pennypack Creek Watershed Study (Meenar 2011) completed by the Center for Sustainable Communities at Temple University (Temple) scaled many of the ReVA data inputs and other data inputs down from a regional to a watershed level. These data were used to develop a WIVA. It is noted that Temple completed just the watershed inventory, not the vulnerability assessment.

The FAPH WIVA generally follows the data inputs and spatial analysis listed in the article "Developing a Watershed Inventory for Vulnerability Assessment using ArcGIS," (Meenar 2011). To complete the WIVA, EEE mainly used ArcGIS analysis tool/software to build the vulnerability assessment data inputs for existing land use conditions.

The watershed inventory was developed from the following data sets, which are part of the FAPH data library or obtained from the NRCS:

- Sixth Order HUC Watersheds
- Soil Survey Geographic (SSURGO) Soils Database
- 10-meter Digital Elevation Model (DEM)
- FAPH Wetlands
- FAPH Resource Protection Areas (RPAs (100-foot buffer))
- 2010 FAPH Land Cover (includes forest cover and impervious surfaces)
- FAPH Firing Ranges and Live Fire Ranges (range Cover)
- FAPH Stream Centerlines
- FAPH Surface Water Bodies
- FAPH Drainfields
- FAPH Forestry Branch FY09-13 Harvests
- FAPH and DPTMS FY2011 and 2012 Projects

These data sets were selected in an effort to match the Temple Pennypack Creek Watershed Study. In some cases, data sets used in the Temple study were not available at FAPH. It was beyond the scope of this WMP to conduct field reconnaissance for data collection to support the WIVA.

Based on the available data sets, the physical and ecological characteristics of FAPH watersheds, current and probable future regulatory requirements related to water quality, and the historical, current, and anticipated future use of FAPH to complete is military mission objectives, a series of metrics or variables were developed to inventory watershed vulnerability. The metrics or variables developed in the WIVA include:

- Percent of Watershed with Forest Cover
- Percent of Watershed with Recent and Near Future Forest Management Activity (Fiscal Years 2009 to 2013)
- Slope
- Percent of Watershed with Highly Erodible Soils
- Watershed Average Curve Number (CN)
- Percent of Watershed with NWI Wetlands
- Percent of Watershed with RPAs
- Percent of Watershed with Range Cover
- Percent of Watershed with Impervious Cover
- Percent of Watershed with Anthropogenic Disturbance Within and Proximal (100-feet) to RPAs
- Percent of Watershed with Recent and Next Future Project Activity (Fiscal Years 2011 and 2012)

In both the EPA ReVA program and the WIVA, the data inputs include both stressors/conditions and resources/sensitivities. All of the above variables, except percent forest cover and RPAs, are considered stressors/conditions. Percent forest cover and wetlands are typically considered to be resources/sensitivities that are affected by the stressors. In the vulnerability assessment presented in Section 6.0, percent forest cover and RPA are treated as a condition that has a mitigating effect on other watershed stressors.

As discussed in Section 8.0, the vulnerability assessment would be significantly improved if high value watershed resources, such as threatened and endangered species habitat and high quality aquatic habitat were added to the WIVA. Other variables were evaluated and rejected because they did not provide a good representative measure of watershed stressors or conditions. One variable considered was the ratio of impaired streams length to watershed area. This variable was eliminated because there are multiple parameters for impairment, almost all of which are probably due, in whole or part, to natural conditions. Other variables such as percent of watershed flowing through existing lakes, ponds, and stormwater best management practice (BMP) structures, were not used due to insufficient data but should be considered for future development and use.

Most variables, such as percent forest cover, RPAs, range cover, and impervious cover were developed without the use of models. Other variables were developed from various ArcGIS tools (described in more detail in the sections below).

All of the variables except slope and curve number were normalized by dividing the areal extent of a particular variable by the watershed area. Division of multiple sets of data by a common variable negates that variable's effect on the data, and allows the underlying characteristics of the data sets to be compared by establishing a common scale (percent of watershed area).

For each variable, GIS analysis was performed to divide each metric/variable into five natural breaks, using the Jenks Optimization Method (ESRI 2011). The Jenks method is used to determine the best arrangement of values into different classes. Each GIS-based analysis that was run included applying the Jenks method. Prior to the analysis, a subjective determination was made that the Jenks method should seek to identify five clusters of data. When the method was applied, the data were grouped into five similar clusters or groups.

5.1.1.1 Slope

Slope is an important characteristic of a watershed, due to its direct contribution to the amount and rate at which runoff occurs during a rain event. The greater the slope, the greater the chance that rainfall will runoff the landscape instead of infiltrating into the ground. Steeper slopes also increase the runoff velocity which, in turn, causes streams to exhibit higher velocities. This may increase the amount of stream bank erosion and incision in the stream bed.

The slope analysis was conducted using the 10-meter DEM for Caroline County, which was supplied by the NRCS. The DEM is a mosaic of 10-meter blocks that each have an individual value which represents the average elevation of that block. The DEM was analyzed using the "slope" tool from the Spatial Analyst Extension in ArcGIS. The Slope tool returned a 10-meter block mosaic of slope values, measured in degrees, for the desired area. These values were then further classified into five slope ranges based on the SSURGO letter classification for slope.

5.1.1.2 Highly Erodible Soils

Highly erodible soils were included in the WIVA to identify and rank areas prone to erosion. The areas of highly erodible soil are more likely to contribute elevated levels of sediment to stormwater runoff. The highly erodible soil data used for this analysis were taken from the NRCS soil data. These data were divided among the 13 watersheds and then divided by the total area of each watershed to create a percentage of highly erodible soils for each watershed. The Jenks method was then applied to these percentages to identify five clusters of data.

5.1.1.3 Curve Numbers

Curve Number (CN) is a measure of overland runoff potential created by the NRCS. CNs were selected from a chart supplied by the NRCS by matching FAPH land use of an area with the underlying hydrologic soil groups. CNs range from 0 (no precipitation leaves as runoff) to 100 (all precipitation leaves as runoff).

The CN analysis was conducted using a combination of FAPH 2010 land use survey data, NRCS SSURGO soils database for Caroline County, and the ArcCN-Runoff tool in ArcGIS. The two data layers were intersected to create a single layer mosaic of all the land uses and underlying hydrologic soil groups. The intersected land use/soils layer was then used as an input for the ArcCN-Runoff tool and NRCS CNs were determined for each individual land use/soil area. These values were averaged over each watershed to create an overall CN for each watershed.

5.1.1.4 Forest Cover

Forest cover was included in the WIVA as a measure of the undeveloped portions of each watershed, as well as the natural forest buffers that surround water bodies within the installation. The forest cover data used for this analysis were derived from the general land cover data, and include the three main forest cover types: southern yellow pines, mixed hardwoods, and mixed pine/hardwood. Changes in forest area and composition occur on a continual basis. Therefore, the forest cover data presented herein are not considered an exact measure. Forest cover was summed for each of the 13 watersheds and then divided by the total area of each watershed to create a percentage of forest cover for each watershed. The Jenks method was then applied to these percentages to identify five clusters of data.

5.1.1.5 Forest Management

The Forestry Branch of the Environmental Division within the Directorate of Public Works oversees management of the installation forest resources through the FAPH Forest Management Plan (FMP) and the Strategic Forest Management Plan (SFMP). Three data sets were evaluated for inclusion in the WIVA/Vulnerability Assessment:

- Harvest_Status_Tracking_FY06-12
- FY09-13_5-yr Harvests_EA_20090126
- FY12_Prescribed_Burn_Plan_20111122

The Prescribed Burn Plan was not used because prescribed burns are used in most of the forested and mixed vegetation areas for wildlife habitat, vegetation control and fuel reduction. Due to their extensive use in all the subwatersheds, the prescribed burns did not appear to be sufficiently discriminative to assess watershed vulnerability.

The Harvest_Status_Tracking_FY06-12 data set includes the status (completed, dropped, on-hold, planned, etc) of forest harvest actions from 2006 through 2011. The exact nature of the harvest could not be determined from the data set. The FY09-13_5-yr Harvests_EA_20090126 data set shows all of the potential harvest blocks for a 5-year period that were examined and addressed in the Forestry Management Action Environmental Assessment for this time period. The data set appeared to be the most comprehensive and was therefore used as a measure of potential watershed stress associated with forest management activities.

It is noted that the Forestry Branch utilizes an ecosystem management approach to conserve and sustain the forest, natural, and cultural resources of FAPH in a manner sufficient to meet installation requirements for military training (FAPH 2009), and that many of the forestry management projects are specifically designed and implemented to improve the health of the forest resources and ecology. These actions also include adherence to the Virginia Department of Forestry's Best Management Practices for Water Quality (DOF 2011).

The forest management actions were used as a measure of potential watershed stress in this analysis to assess the potential effects of the short term watershed disturbance associated with implementation of the actions (clearing and grading of logging roads, equipment usage, etc) and longer term changes in forest composition and coverage.

5.1.1.6 Resource Protection Areas

The Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20-10 et seq.) were developed to improve water quality in the Chesapeake Bay and its tributaries by requiring the use of effective conservation planning and pollution prevention practices when using and developing environmentally sensitive lands. In the regulations Resource Protection Area (RPA) are defined as: tidal wetlands; non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow; tidal shores; such other lands considered necessary by the locality to protect the quality of state waters; and a 100-foot wide vegetated buffer adjacent to, and

landward of, these features. FAPH extended the RPA buffer to include intermittent streams and all wetlands due to the biological importance of these resources.

The FAPH RPA data layer only includes the 100-foot RPA buffer around the natural resources (streams, impoundments, and wetlands). The RPA WIVA analysis was conducted by combining the FAPH RPA (buffer) data layer, and the FAPH Wetlands data layer to create an RPA layer. This RPA layer was intersected with the watersheds layer. The total area of RPA was identified for each watershed. The RPA area values were normalized by dividing by the watershed area, and expressing the result as a percentage of watershed area. The percentage of a watershed comprised of the combined RPA is an excellent watershed metric as it is inclusive of streams, surface water impoundments, wetlands, and riparian buffers.

5.1.1.7 Proximity of Anthropogenic Activities to Resource Protection Areas and Streams

Stream studies have shown that the proximity of most anthropogenic activities to surface water stream channels has a direct and generally adverse effect on water quality, and on aquatic and riparian habitat and ecology. In addition to the direct impact of anthropogenic activity on aquatic and riparian habitat and ecology, the closer anthropogenic activity is to streams and RPAs, the less opportunity there is for natural processes such as sorption, filtration/infiltration, biotransformation, and dilution to attenuate any increase in stormwater runoff and pollutants from the activity. Therefore, the proximity of anthropogenic activity to RPAs and streams provides a useful measure of potential stress to water quality, and aquatic and riparian habitat and ecology.

The anthropogenic activities considered in the WIVA include the ranges, and impervious surfaces for FAPH roads, parking areas, and buildings. This analysis was accomplished by combining the impervious surface and ranges categories of the FAPH land cover layer into one anthropogenic layer using the Union command in ArcGIS. Initially, multiple polygons were established at 100-, 200-, 600-, and 1,000-foot intervals around all of the watershed streams in the FAPH stream centerline layer by using the Buffer command. The polygon-buffer layers and the anthropogenic layer were then intersected. The resulting area of anthropogenic disturbance within each polygon-buffer were totaled for each watershed and recorded. The areas were then separated and summed by watershed. The anthropogenic disturbance results were then normalized by dividing by the total watershed area.

In evaluating the results of this analysis, it was determined that including all four buffer distances/areas was a redundant analysis of the anthropogenic (range and impervious surface cover) activity proximity to stream channels that would skew (over-weight) the Vulnerability Assessment. In addition, the existing FAPH stream centerline layer is based on the National Hydrologic Dataset, and does not include a very large number of low order intermittent and ephemeral streams, and RPAs (contiguous wetlands and buffers) that extend higher in the watersheds. The stream centerline data layer also did not accurately represent the areal extent of the numerous impoundments or surface water bodies within the installation. Therefore, the initial analysis did not provide a complete

assessment of anthropogenic activity proximal to RPAs that are protected by state and local laws, regulations, and ordinances, and FAPH policy.

The revised assessment of anthropogenic activity proximal to RPAs and streams was completed by establishing polygons extending an additional 100 feet around the combined RPA (wetland and RPA buffer) layer, and merging this layer with the combined anthropogenic (range and impervious surface) layer. The total area of anthropogenic activity within 100-feet of the combined RPA layer was identified for each watershed. The area values were normalized by dividing by the watershed area, and expressing the result as a percentage of watershed area.

5.1.1.8 Range Cover

The shooting and artillery ranges represent the single largest human activity within FAPH. Impacts associated with these ranges include the clearing of vegetation, erosion from vehicular and pedestrian traffic, and contamination from field maintenance on weapons and/or lead containing ordnance (FAPH 2009). These impacts can result in increased levels of nitrogen, phosphorus.

FAPH keeps a digital layer file of all the ranges on base and their associated areas. The range analysis was conducted using a combination of FAPH live fire ranges and firing areas GIS data layers. These layers were intersected with the watersheds layer to create a layer with all the ranges separated into individual watersheds. The total areas of the ranges were then summed for each watershed and divided by the total watershed area to give a normalized percentage.

5.1.1.9 Impervious Surfaces

Impervious surface is any man-made material that prevents or limits infiltration of water into the soil. Impervious surfaces buildings, roads, and parking lots. Impervious surface affect watersheds because they displace natural vegetation, decrease infiltration, and increase total and peak runoff rates and volumes. In addition, runoff from impervious surfaces generally contains higher concentrations of certain pollutants (mainly nutrients, metals and petroleum hydrocarbons), which are transported, largely unattenuated, into streams.

The total area of impervious surfaces was identified for each watershed from the land cover data set. The impervious surface area values were normalized by dividing by the watershed area, and expressing the result as a percentage of watershed area.

5.1.1.10 FAPH FY 2011-2012 Projects

The final variable used in the WIVA/Vulnerability Assessment was the Fiscal Year 2011-2012 Projects data set provided by FAPH Master Planning Division and Directorate of Plans, Training, Mobilization, and Security (DPTMS). The Projects data set identifies activities that have been completed in Fiscal Year 2011 and those scheduled for Fiscal Year 2012. Projects in the data set include Improvised Explosive Device Demolition, Explosive Ordinance Disposal, Forward Operating Bases, and various installation

buildings. Therefore, this data set provides a measure of recent and near future anthropogenic activity that may pose a stress to the watersheds.

The Project analysis was conducted by intersecting the Projects layer with the watersheds layer. The total area of Projects was identified for each watershed. The Project area values were normalized by dividing by the watershed area, and expressing the result as a percentage of watershed area.

5.2 Vulnerability Assessment

The objective of the FAPH vulnerability assessment was to assess and rank the potential vulnerability of the 13 FAPH watersheds based on the WIVA. Vulnerability has multiple elements in its definition, but is most simply represented by the likelihood that future conditions will change in a negative direction resulting in a decrease in the overall ecological health of the watershed. Thus, the vulnerability of a watershed increases as the number, intensity, and frequency of stressors increase. It is important to note that the vulnerability of a watershed is a relative rather than absolute measure. This analysis does not provide estimates of the probability of change. Nor does the analysis attempt to address the equilibrium state or potential for a watershed to undergo a significant change or a short period of time. It does provide a screening tool for identifying the most and least vulnerable watersheds in a given area, which may be used to evaluate the potential effect of management decisions (i.e., land use changes) on the water quality and ecological systems within the watershed.

ReVA presents multiple methods to construct a vulnerability assessment. For this assessment, EEE used the data clusters from Jenks Optimization Method combined with a simple application of the ReVA Matrix approach to assess watershed vulnerability. Using the Jenks method, the inventory data were grouped into five similar clusters or groups to produce a relative ranking. For example, when the Jenks method was run on the soil erodibility data, it created five clusters of similar factors. Areas within the highest or most erodible soil cluster received five points (highest stress or vulnerability), and areas in the lowest or least erodible soil cluster (lowest stress or vulnerability) received one point, with the remaining clusters receiving rankings between two and four. For the resource variables percent forest cover and RPA, the rankings were reversed. For example, watersheds with the least forest cover or RPA received five points and the watersheds with the most forest cover or RPA received one point.

These relative rankings were then entered into a watershed - stressors/conditions matrix. The ranking numbers were then summed for each watershed, and priority levels were assigned to the watersheds based on the total numbers of points. The results of the vulnerability assessment are presented in Section 6.0.

5.3 Department of Defense Protocol

The DoD *Installation Watershed Impact Assessment Protocol* is a holistic planning approach to assist DoD installations in complying with TMDLs and drinking water requirements. The DoD Protocol is clearly defined in the *Department of Defense Installation Watershed Impact Assessment Protocol* (DoD 2005). This document includes instructions on how to complete a series of spreadsheets. These spreadsheets, which are presented in Excel format, include various formulas and equations to assist in the ranking and analysis of military activities within the given watershed. Specific results of the WIVA are included in Appendix A of this document.

Beginning in early 2011, representatives from the ENRD, FAPH Forestry, Master Planning, and other offices formed a working group to complete the spreadsheets required in the DoD Protocol (See Section 6.0 and Appendix A). This process provided additional stakeholder input into the WMP. The meetings also allowed the different individuals and offices to become more familiar with other programs being conducted within FAPH. This interdisciplinary approach was a great benefit to the planning process and will continue to benefit the FAPH watersheds as the plan is implemented. The complete version of these spreadsheets is included in Appendix A of this document.

These scores presented in these spreadsheets do not have any regulatory or monitoring value. They are a scoring system devised for the purposes of internal DoD analysis. In the future, when FAPH moves forward with the remaining portions of these spreadsheets, it will be possible to identify which of the higher scores can be addressed within the scope of the DoD's mission at FAPH and prioritize these actions.

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6.0 Watershed Vulnerability and Impact Assessment

6.1 Vulnerability Assessment

As discussed above, the WIVA was conducted by integrating large-scale spatial databases to develop selected environmental metrics or variables that were used to assess the vulnerability of the FAPH watersheds. The analysis was designed to evaluate where watershed problems exist or are likely to occur in the future, environmental stresses of concern, and the potential effect of various management decisions on the watershed resources

The following sections present the results of WIVA and vulnerability assessment for the 13 FAPH watersheds based on the environmental metrics or variables presented in Section 5.0. The vulnerability rankings of each watershed by variable, and cumulatively also are presented. Appendix A presents a more detailed discussion of the WIVA and vulnerability assessment results by watershed.

6.1.1 Slope

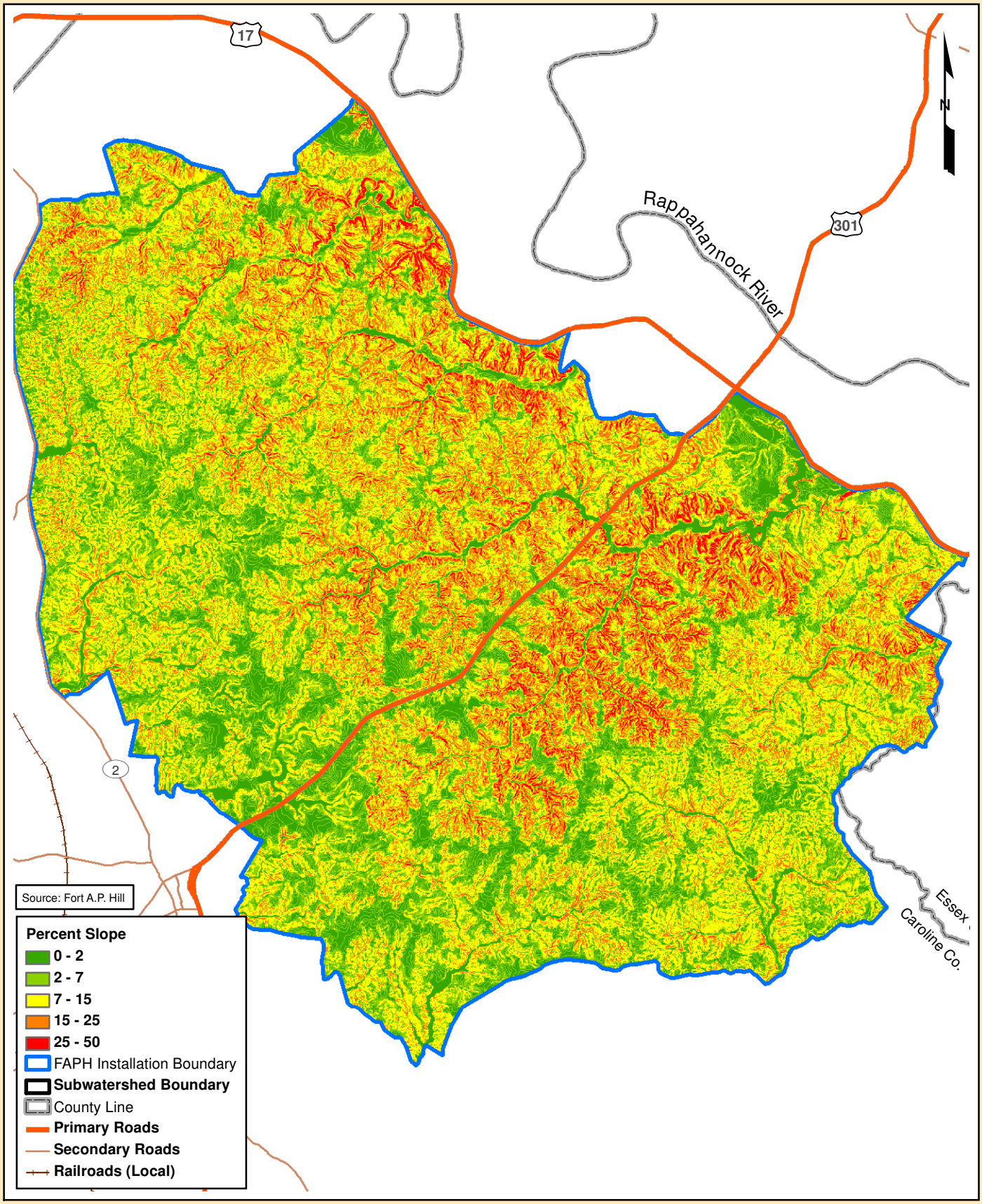
Figure 7 illustrates the watershed slopes. Figure 8 and Table 8 displays the watershed slope vulnerability ranking. The analysis found that the steepest slopes occur in the northern and eastern watersheds, with the highest slopes found in Mill Creek, Goldenvale Creek, and Mount Creek watersheds. These watersheds also appear to have the highest drainage densities. Watersheds in the Mattaponi/York River watershed generally had the lowest rankings based on slopes.

Table 8: Slope

Watershed	Ranking
Battery Lane	1
Gregg Pond	1
Meadow Creek	1
Elliots Pond	2
Roys Run	2
Smoots Run	2
Ware Creek	2
Bowies Pond	3
Portobago Creek	3
Whites Lake	3
Goldenvale Creek	4
Mount Creek	4
Mill Creek	5

In general, watersheds with higher overall slopes typically have lower infiltration rates, shorter sheet flow distances, and higher drainage densities that generally result in higher overall runoff volumes, lower groundwater recharge, and less natural attenuation of pollutants. In addition, steep slopes typically cause shorter times of concentration which increase peak flow rates that result in more channel modifying (erosive) runoff events and possibly higher sediment loads. Sediment is one of the pollutants targeted by the Chesapeake Bay TMDL and is a high priority for future management of the FAPH watersheds.

Therefore, watersheds with higher slopes are considered more vulnerable to environmental change and degradation from changes in land use. Although slope is primarily a measure of natural conditions that is mainly dependent on the geologic framework, overall topographic relief in the watershed, and elevation of the watershed outlet, the overall slope conditions of the watersheds and their potential effect on surface water runoff should be considered in future management efforts.



0 10,000 20,000 Feet

0 3,000 6,000 Meters

Percent Slope

Fort A.P. Hill
Caroline County, Virginia

Figure 7

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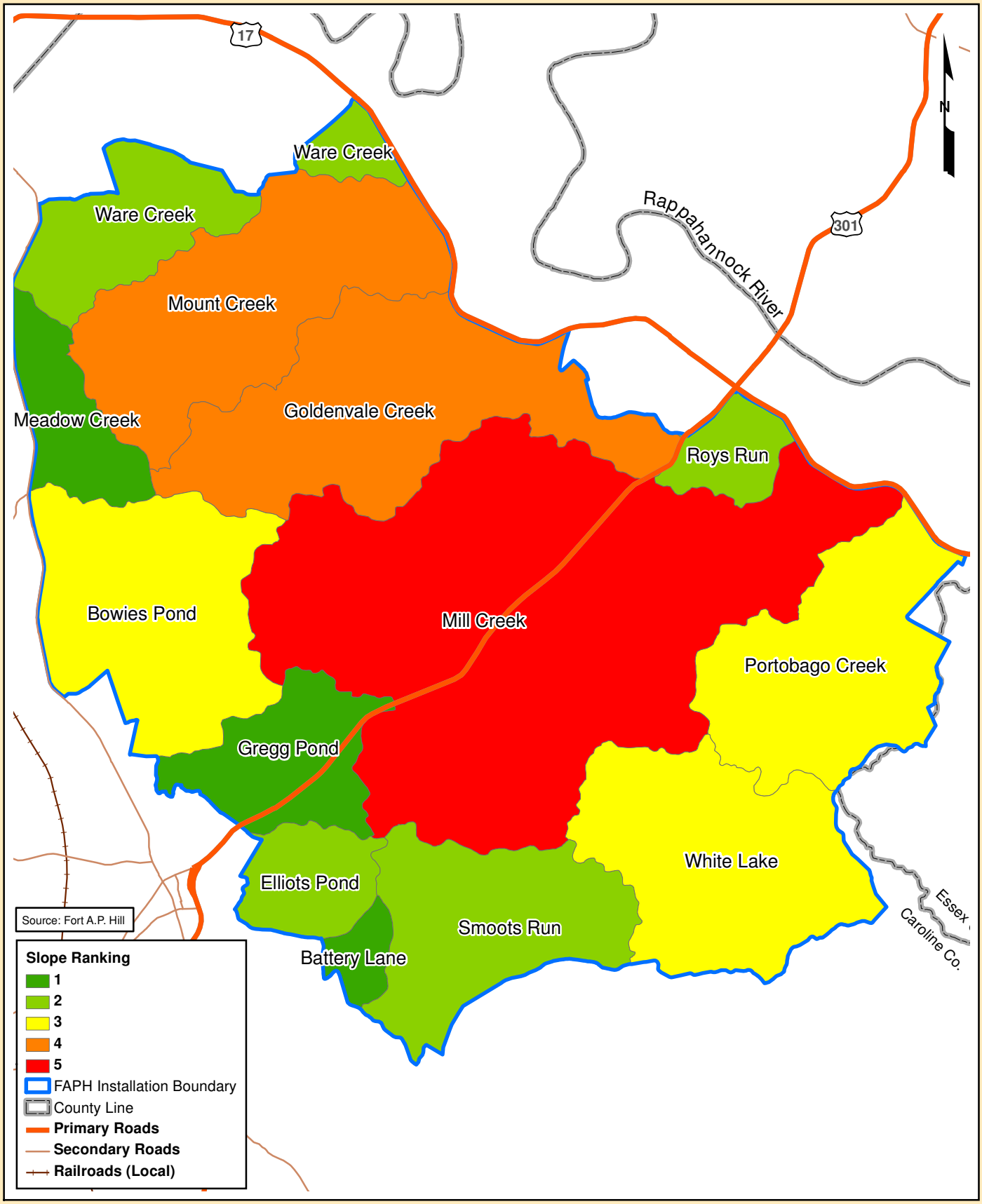

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Slope Ranking

Fort A.P. Hill
Caroline County, Virginia

Figure 8

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6.1.2 Highly Erodible Soils

Table 9 presents the acres of highly erodible soils within each watershed, the percent of the watershed containing highly erodible soils, and the vulnerability ranking of each watershed. Figure 9 presents the vulnerability ranking of the watersheds based on highly erodible soils.

Table 9: Highly Erodible Soils

Watershed	Acres of Highly Erodible Soils	Percent of Watershed Comprised of Highly Erodible Soils	Ranking
Meadow Creek	420	20.03	1
Gregg Pond	685	22.55	2
Elliots Pond	481	26.57	2
Bowies Pond	1,779	26.65	2
Goldenvale Creek	2,320	27.72	2
Battery Lane	188	28.44	2
Roys Run	443	35.26	3
Smoots Run	2,284	45.42	3
Ware Creek	2,026	52.54	4
Mount Creek	4,260	56.74	4
Whites Lake	4,307	63.11	5
Mill Creek	13,541	63.46	5
Portobago Creek	4,224	68.14	5

Note: Acreages and percentages based on GIS analysis

The percent highly erodible soils appears to be a function of the geologic units exposed at the ground surface. Given the relatively flat (slight dip to the southeast) aspect of the geologic units, the exposure of the various geologic units at the ground surface is a function of the overall topographic relief and elevation at the watershed outlet. Watersheds with high topographic relief and low outlet elevations, such as Mill and Portobago Creeks, have greater surface exposures of the more fine-grained and erodible Tertiary fluvial-marine sediments compared to watersheds such as Meadow Creek with lower topographic relief and relatively high outlet elevations where the principal geologic unit exposed at the ground surface is the Late Tertiary Bacons Castle Formation that consists of less erodible sands and gravels.

Although, the percentage of highly erodible soils does provide a good measure of the relative watershed vulnerability to adverse effects of erosion (both natural and anthropogenic related erosion), specific management efforts should be directed at minimizing disturbance of the specific highly erodible soil areas within each watershed and minimizing the generation of surface water runoff to downstream areas through proper use of stormwater BMPs and Low Impact Development (LID) techniques.

6.1.3 Curve Numbers

The CNs for the individual watersheds and vulnerability ranking are presented on Table 10 and Figure 10.

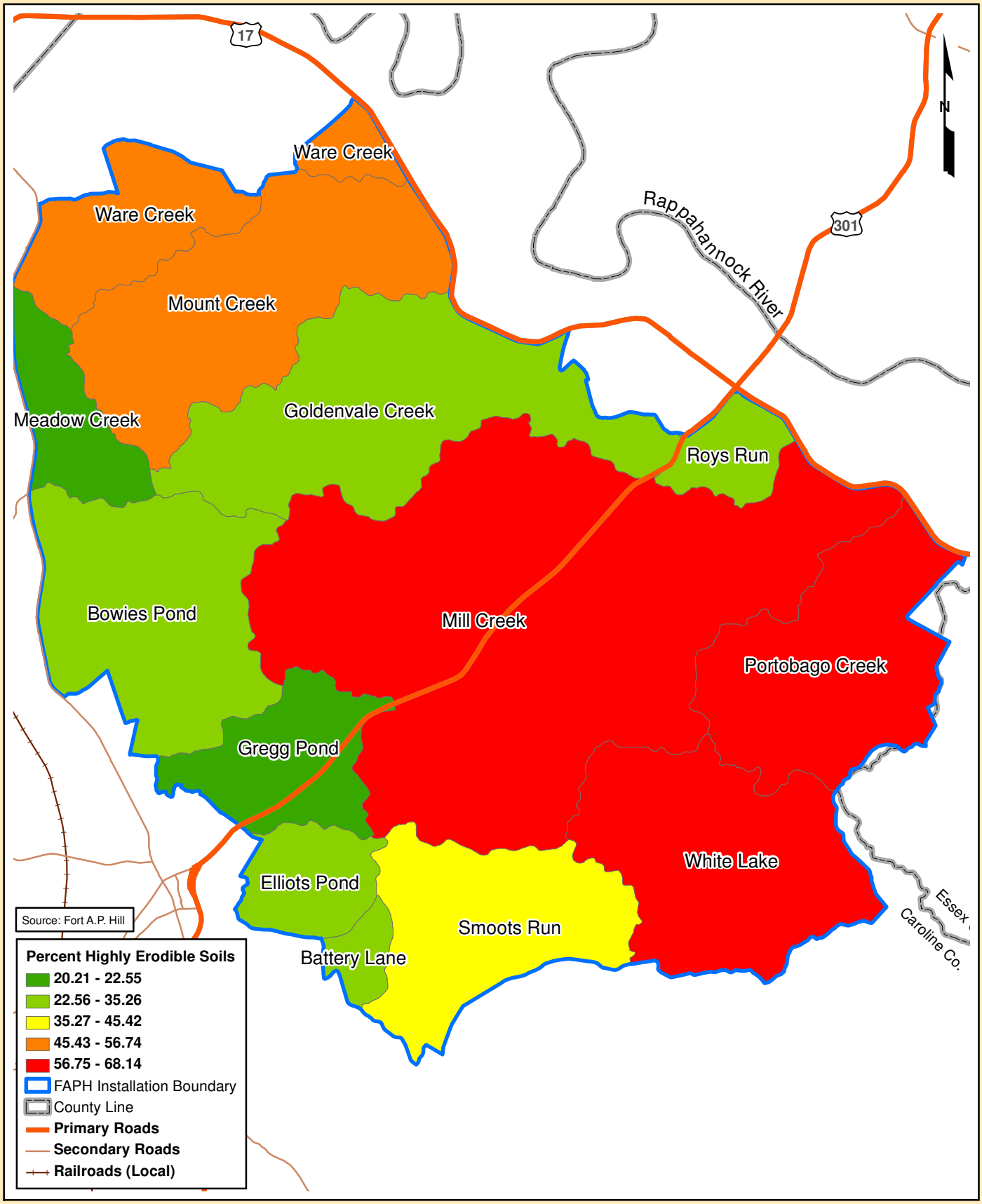
Table 10: Curve Numbers for the FAPH Watersheds

Watershed	Average CN	Ranking
Mill Creek	63	1
Portobago Creek	63	1
Goldenvale Creek	64	2
Mount Creek	64	2
Smoots Run	64	2
Ware Creek	64	2
Whites Lake	64	2
Battery Lane	66	3
Bowies Pond	66	3
Elliots Pond	65	3
Gregg Pond	66	3
Roys Run	68	4
Meadow Creek	71	5

These CNs were found to be slightly higher than those calculated in the 2007 FAPH WMP. The difference is most likely attributed to the land cover data and software used to derive the numbers.

Both the 2007 and current CNs fall within a relatively narrow range. Although CNs can be an important variable of the watershed analysis process, and were carried through this analysis, they are based on the hydrologic soil groups and land use within the watershed. The CN analysis appears to have limited value in the vulnerability assessment and should be considered in combination with a number of other factors. One would expect the watersheds with the highest CNs (greatest runoff potential) to be those with the highest percentage of erodible soils and impervious cover (Section 6.1.2 and Section 6.1.9). Comparison of CNs to erodible soils and impervious cover indicate a poor correlation between the data sets. Additional investigation of the CN generation method is recommended.

However, in general, watersheds with higher CNs produce greater runoff and presumably more pollution loading per precipitation event than watersheds with lower CNs. Therefore, land use (quantity, type, and pollution sources) within the watersheds with the highest CNs may have a greater effect on water quality than lower CN watersheds, and should be prioritized.



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Percent Highly Erodible Soils

Fort A.P. Hill
Caroline County, Virginia

Figure 9

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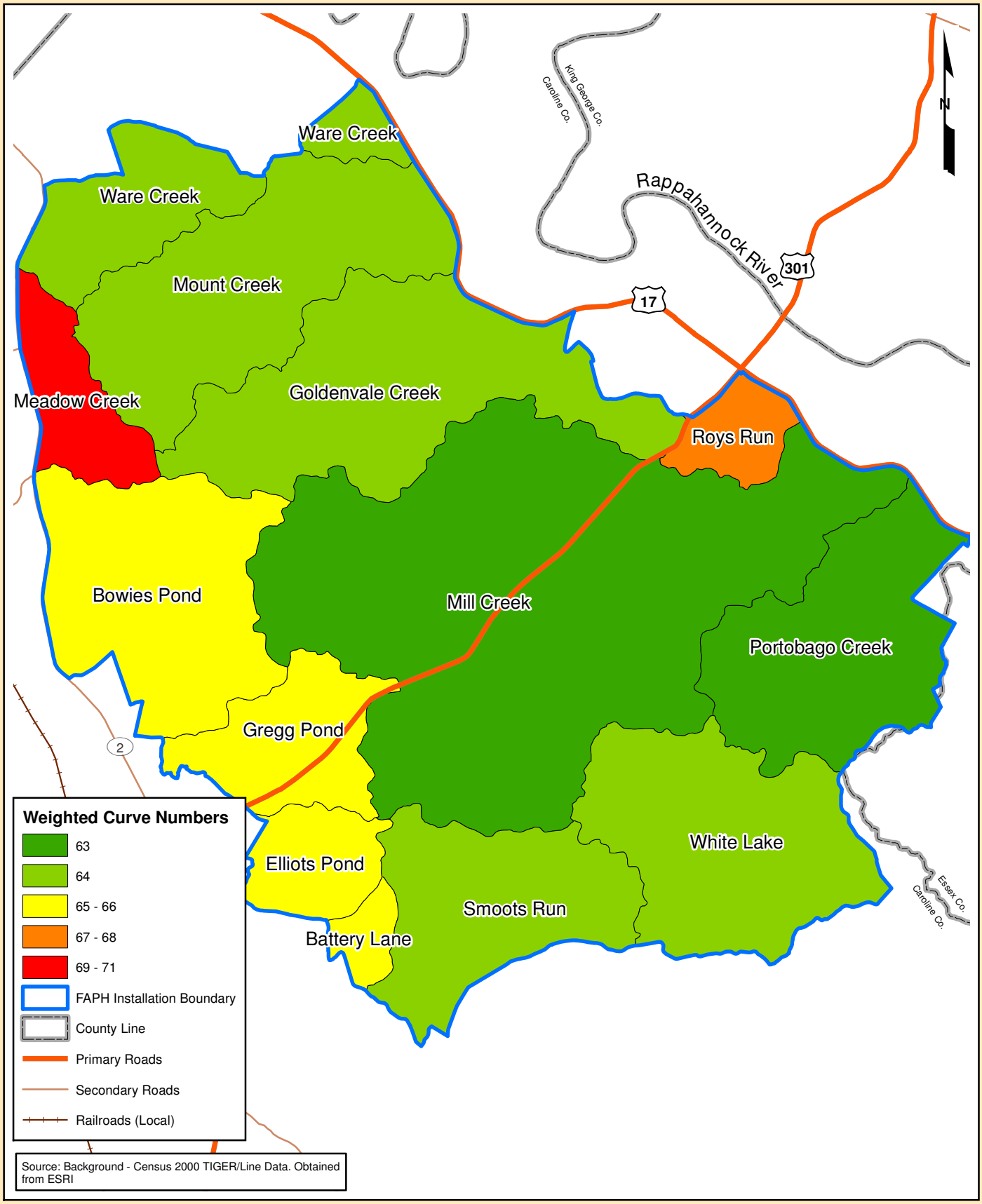

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Weighted Curve Numbers

Fort A.P. Hill
Caroline County, Virginia

Figure 10

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6.1.4 Forest Cover

As noted previously, percent forest cover for each watershed was determined from the FAPH land cover data (Figure 3). Changes in forest area and composition occur on a continual basis. The forest cover data presented herein does not reflect more detailed mapping and analysis completed by FAPH Forestry Branch.

Table 11 and Figure 11 present the WIVA results and vulnerability rankings of the watersheds based on forest cover. The watersheds with highest percent forest cover had the lowest vulnerability ranking due to the positive attributes of forest cover. More detailed analysis of the forest composition, continuity, and proximity to surface water bodies would enhance the use of forest cover in the assessment.

As expected, the less developed watersheds with higher topographic relief and drainage densities in the northwestern part of FAPH have the greatest forest cover; whereas, the more developed watersheds with lower topographic relief and drainage densities along the Rappahannock/York River drainage divide in the southern part of FAPH have the lowest forest cover.

Forest cover is a widely used measure of potential water quality impacts at the watershed scale. As noted earlier, percent forest cover is treated as a watershed condition, not as a resource, in this analysis. The water quality benefits of forests include stabilizing soils and slopes, and trapping, slowing, and filtering runoff. The additional benefits of riparian forest buffers are well documented and include reduction in nutrient (phosphorous and nitrogen) loading to the streams, stabilization of channel banks, shading to lower water temperatures, and high value aquatic and riparian habitat. Forests also contribute organic carbon and organic nitrogen to the ecological system. Although the addition of organic carbon and nitrogen is generally a benefit, excess nitrogen can be generated in a forested watershed that has naturally burned or from prescribed burns. Mature forests also transpire large quantities of water from soil moisture, surface water runoff and groundwater.

Table 11: Percent Forest Cover for the FAPH Watersheds

Watershed	Acres of Forest Cover	Percent Forest Cover	Ranking
Ware Creek	3,461	90.06	1
Goldenvale Creek	7,279	86.97	2
Mill Creek	18,381	86.18	2
Mount Creek	6,422	85.57	2
Roys Run	1,044	83.55	2
Bowies Pond	5,482	82.12	3
Whites Lake	5,429	80.12	3
Elliots Pond	1,433	79.24	3
Smoots Run	3,837	76.31	4
Battery Lane	491	74.49	4
Meadow Creek	1,477	71.05	5
Gregg Pond	2,114	69.60	5
Portobago Creek	5,254	69.27	5

Note: Acreages and percentages based on GIS analysis

6.1.5 Forest Management

FAPH forest resources are managed by the Forestry Branch through implementation of the FAPH Forest Management Plan (FMP) and the Strategic Forest Management Plan (SFMP). These actions also include adherence to the Virginia Department of Forestry's Best Management Practices for Water Quality (DOF 2011).

As presented in Section 5.0, the FY09-13_5-yr Harvests_EA_20090126 data set which shows all of the potential harvest blocks for a 5-year period that were examined and addressed in the Forestry Management Action Environmental Assessment for this time period was used as a measure of potential watershed stress associated with forest management activities. No attempt was made to selectively weigh or rank potential watershed effects that may result from the various forest management practices that range from selective thinning to clear cuts. Also, this analysis does not include the regular prescribed burns that are completed throughout much of the installation.

Table 12 and Figure 12 present the WIVA results and vulnerability rankings of the watersheds based on forest management activities. As expected, the watersheds with the most forest cover (Table 11) generally also had the most forest management activities based on total acres. The watersheds with the greatest forest management activity based on a percentage of total watershed area are principally located in the northwest and western parts of the installation. Forest management activity for the watersheds in these areas range from 24.75% for Elliots Pond to 32.57% for Meadow Creek. More detailed analysis of the specific forest management activities and their potential for adverse impacts to the watershed ecology would enhance this assessment.

Table 12: Forest Management Areas

Watershed	FY09-FY13 Forest Management Acres Within Watershed	Percent of Watershed Comprised of FY09-FY13 Forest Management Areas	Ranking
Portobago Creek	419.07	6.76	1
Mill Creek	2,283.33	10.70	2
Smoots Run	595.71	11.84	2
Roys Run	157.08	12.49	2
Whites Lake	1,037.58	15.20	3
Bowies Pond	1,042.81	15.62	3
Gregg Pond	513.13	16.89	3
Elliots Pond	448.46	24.75	4
Battery Lane	170.23	25.81	4
Mount Creek	1,987.03	26.46	4
Ware Creek	1,059.77	27.48	4
Goldenvale Creek	2,523.14	30.15	5
Meadow Creek	677.27	32.57	5

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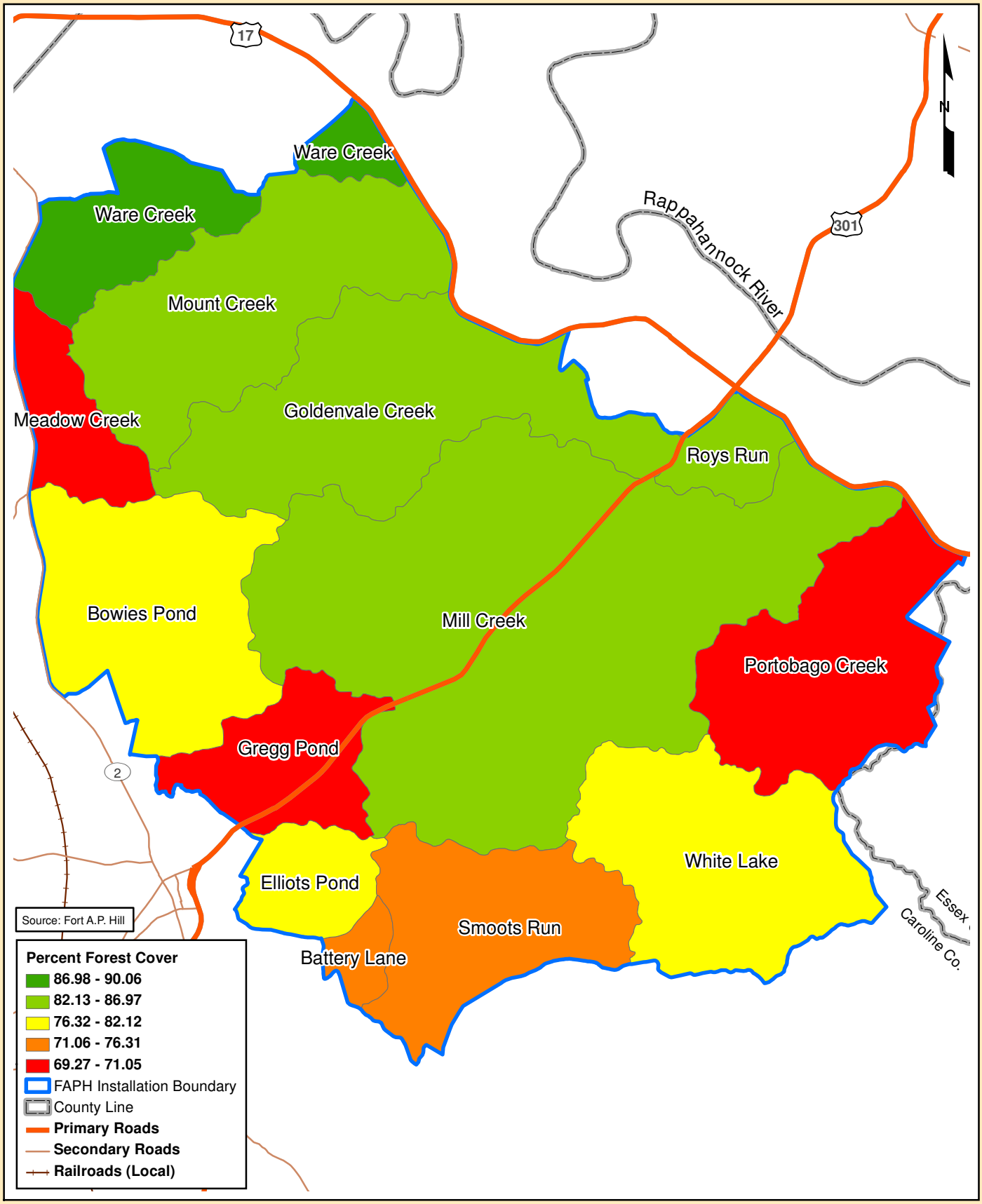

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Percent Forest Cover

Fort A.P. Hill
Caroline County, Virginia

Figure 11

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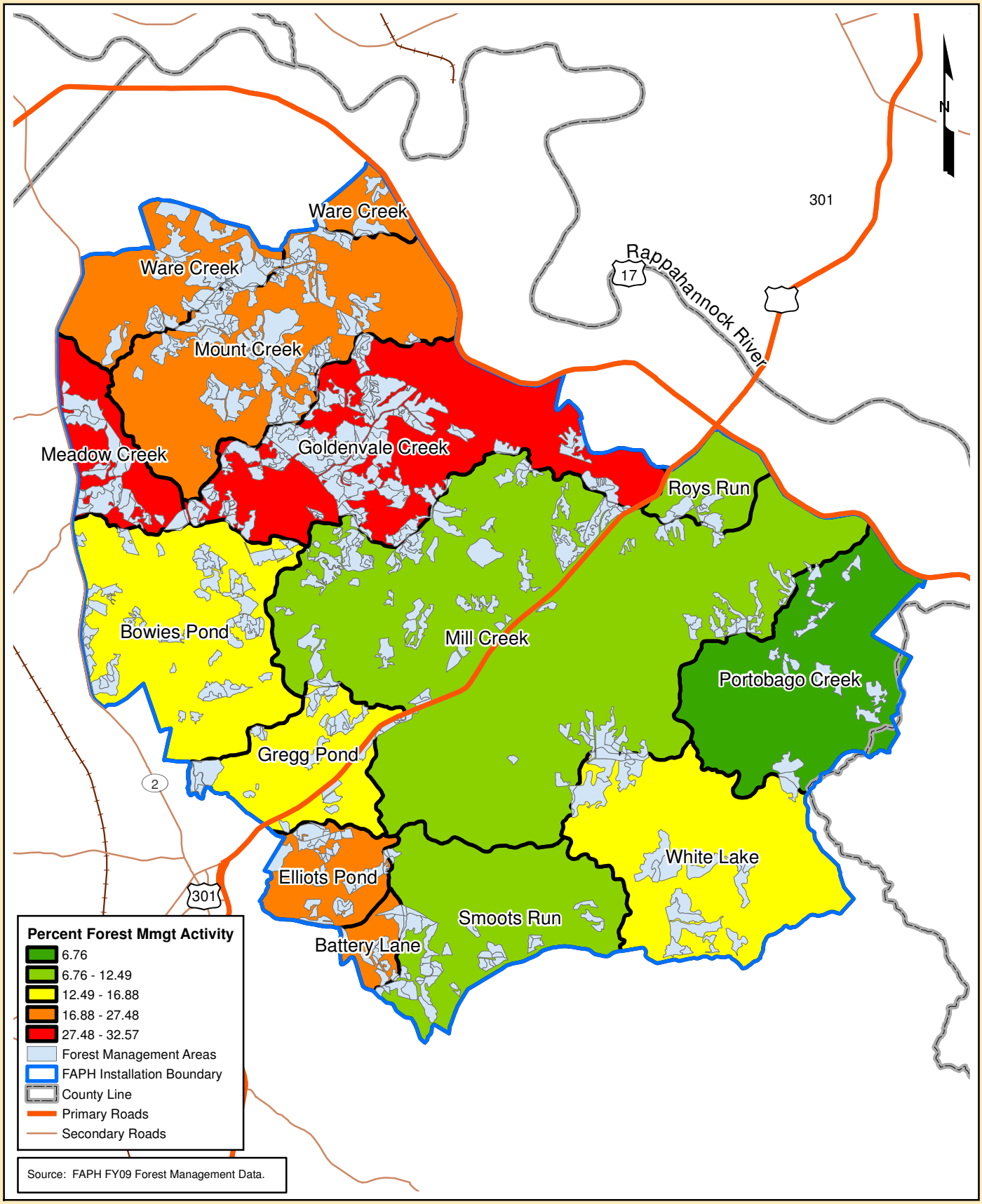

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Recent and Near-Future Forest Management Activity

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 12

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6.1.6 Resource Protection Areas

Table 13 presents the total RPA acres within each watershed, the percent of the watershed containing RPA, and the relative vulnerability ranking of each watershed. Figure 13 illustrates the Jenks clusters and ranking of the watersheds.

Table 13: RPA Area for the FAPH Watersheds

Watershed	RPA Acres	Percent of Watershed Containing RPA	Ranking
Roys Run	373.19	29.68	1
Smoots Run	1,048.66	20.85	2
Elliots Pond	361.69	19.96	2
Gregg Pond	561.83	18.49	3
Mill Creek	3,917.69	18.36	3
Portobago Creek	1,133.12	18.28	3
Mount Creek	1,362.11	18.14	3
Meadow Creek	373.64	17.97	3
Whites Lake	1,220.17	17.88	3
Bowies Pond	1,178.18	17.65	3
Ware Creek	649.52	16.84	4
Battery Lane	106.19	16.10	4
Goldenvale Creek	1,224.51	14.63	5

As noted in Section 5.0, FAPH has established 100-foot wide RPA buffers around all perennial and intermittent surface waters and wetlands. The surface water bodies include streams, natural and man-made ponds, lakes and reservoirs. Disturbance of RPAs is prohibited or significantly restricted by FAPH. Most of the FAPH RPAs are also protected by the Chesapeake Bay Preservation Act.

As shown of Table 13, there is a wide variation of the RPA percentage in the watersheds ranging from 14.63 % in Goldenvale Creek to 39.68% in Roys Run, both of which are located within the Rappahannock River watershed. Almost 18% of the total FAPH land area occurs within the RPA. In other words, nearly one-fifth of the installation is preserved or protected by federal and/or state laws and regulations or FAPH policy. These RPAs, which are principally located in the lower/downstream portions of the watersheds, are a significant resource that serves to mitigate adverse impacts that may be occurring higher in the watersheds. Most of the components of the RPA (ponds, reservoirs, lakes, wetlands, and buffers) decrease the watershed vulnerability by serving as natural BMPs, buffering and mitigating potential adverse affects associated with stormwater runoff before it reaches downgradient surface water bodies. RPAs also are sensitive resources with high ecological value. Therefore, the total RPA acres and percent

of watershed area containing RPAs provide an excellent measure of how much of the watershed has been essentially set aside for ecological conservation/preservation.

6.1.7 Proximity of Anthropogenic Activities to Resource Protection Areas and Streams

In addition to the direct impact of anthropogenic activity on aquatic and riparian habitat and ecology, the closer anthropogenic activity is to RPAs and streams, the less opportunity there is for natural processes such as sorption, filtration/infiltration, biotransformation, and dilution to attenuate any increase in stormwater runoff and pollutants from the anthropogenic activity. Therefore, the watersheds with the highest percentage of area that has been disturbed within or proximal to the RPA are considered to be the most vulnerable or susceptible to degradation from anthropogenic activity.

Table 14 presents the total acres and percent of the watershed with anthropogenic activity within and proximal (100-feet) to RPAs, and the relative vulnerability ranking of each watershed. Figure 14 displays the ranking for this metric.

The analysis indicates that the Whites Lake watershed has significantly more anthropogenic activity, based on both total area (479 acres) and percent of watershed area (7%), within and proximal to RPAs than all the other FAPH watersheds combined. Portobago Creek has the second highest level (177 acres and 2.86%) of anthropogenic disturbance within and proximal to RPAs. Nearly all of the anthropogenic activity in these watersheds is from range cover (See Table 15 and Figure 14). All of the other watersheds have relatively small (less than 1% of the watershed area) anthropogenic disturbance within and proximal to RPAs. The results presented in Table 14 and Figure 14 should be used to focus future stormwater management improvements on those watersheds with anthropogenic activities closest to the RPAs.

It is beyond the scope of this analysis to evaluate the condition of the activities that occur within each watershed or implementation of the Army Small Arms Training Range Environmental Best Management Practices (BMP) Manual. Such an evaluation, however, would be beneficial to advancing this analysis. A potential follow up would be to conduct a qualitative analysis of the type and frequency of activities within 100- feet of the RPAs in each watershed, and the condition and coverage of the RPA buffers and any stormwater management practices. The analysis would be similar to that included in the DoD Protocol, but should be more FAPH-specific. The overall rating for each activity within a watershed could be summed and compared to other watersheds to identify the priority for addressing the condition of the activities and the impact they have on releasing nitrogen, phosphorus, sediment, and other pollutants into the surrounding streams.

Table 14: Watershed Area with Anthropogenic Disturbance Within and Proximal to RPAs

Watershed	Acres With Anthropogenic Disturbance Within And Proximal (100-feet) to RPA	Percent of Watershed Area With Anthropogenic Disturbance Within And Proximal (100-feet) to RPA	Ranking
Ware Creek	4.39	0.11	1
Mount Creek	12.98	0.17	1
Meadow Creek	4.58	0.22	1
Bowies Pond	16.83	0.25	1
Gregg Pond	11.97	0.39	2
Smoots Run	21.50	0.43	2
Roys Run	5.97	0.47	2
Mill Creek	122.88	0.58	2
Elliots Pond	12.62	0.70	3
Goldenvale Creek	62.13	0.74	3
Battery Lane	6.04	0.92	3
Portobago Creek	177.16	2.86	4
Whites Lake	479.17	7.02	5

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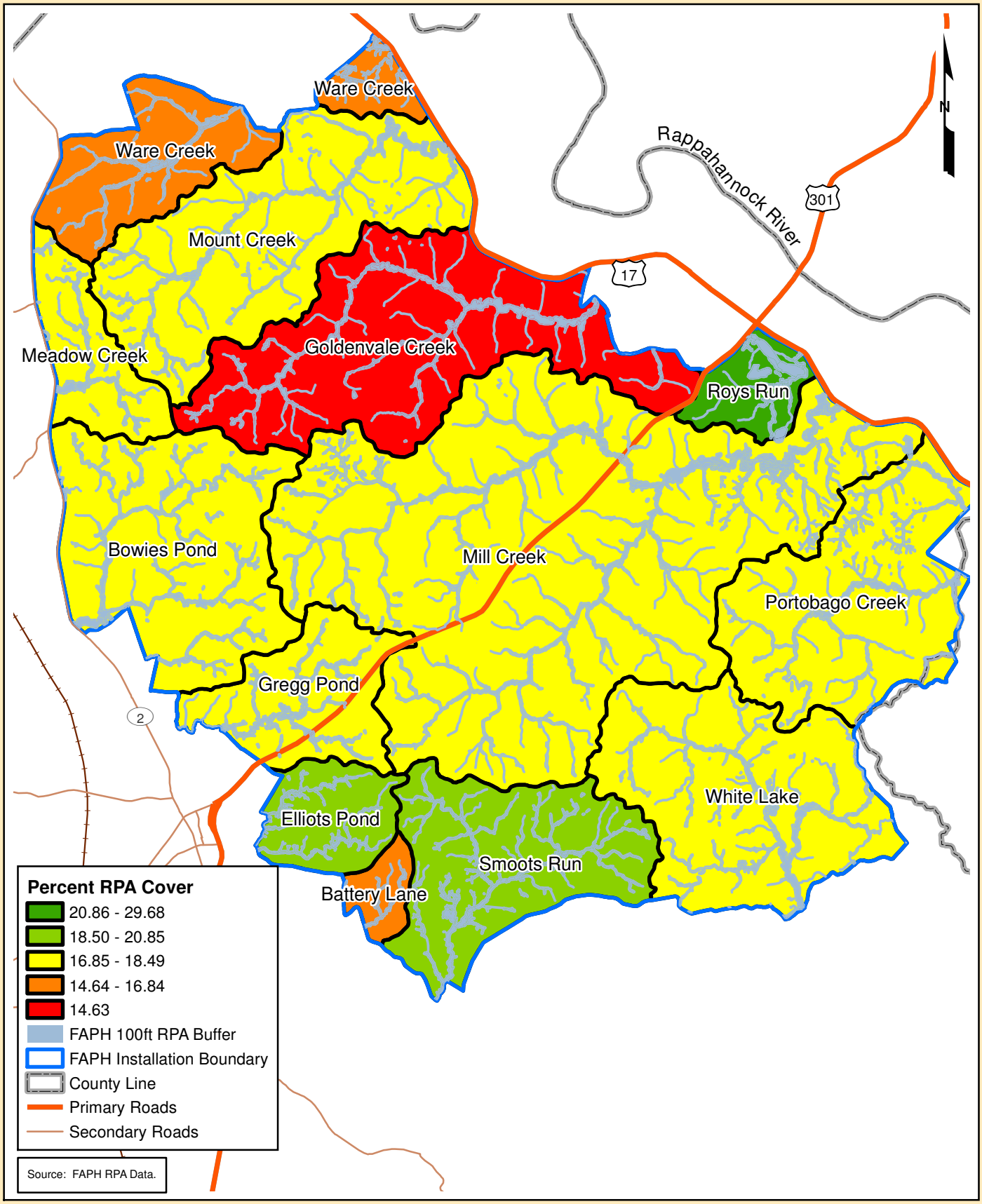

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Percent RPA

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 13

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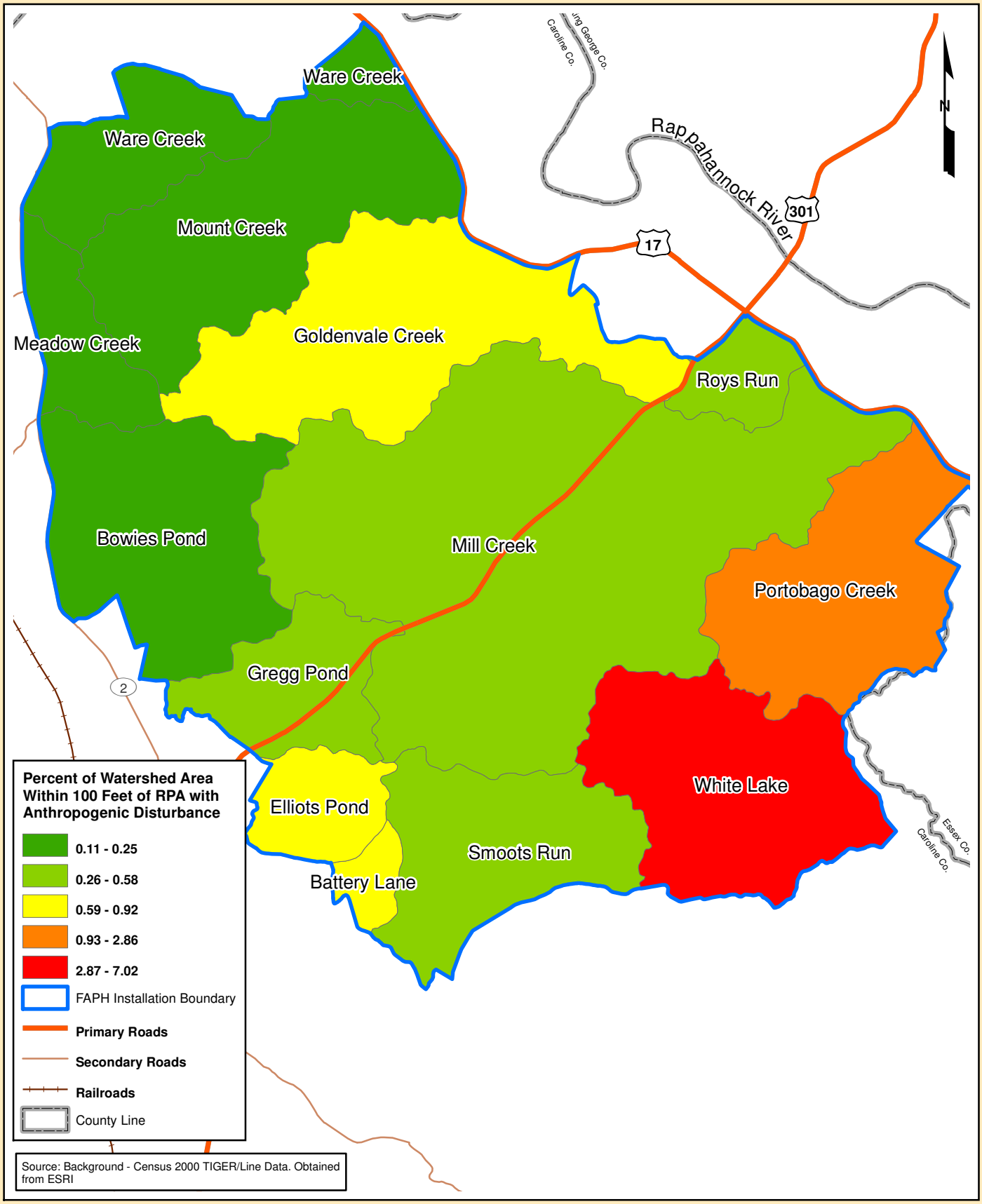

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Anthropogenic Disturbance Within 100 Feet of RPA

Fort A.P. Hill
Caroline County, Virginia

Figure 14

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6.1.8 Ranges

Table 15 presents percent of the watershed containing military ranges, and the vulnerability ranking of each watershed. Figure 15 presents the ranking of the watersheds. Watershed specific results of this analysis are included in Appendix A of this document.

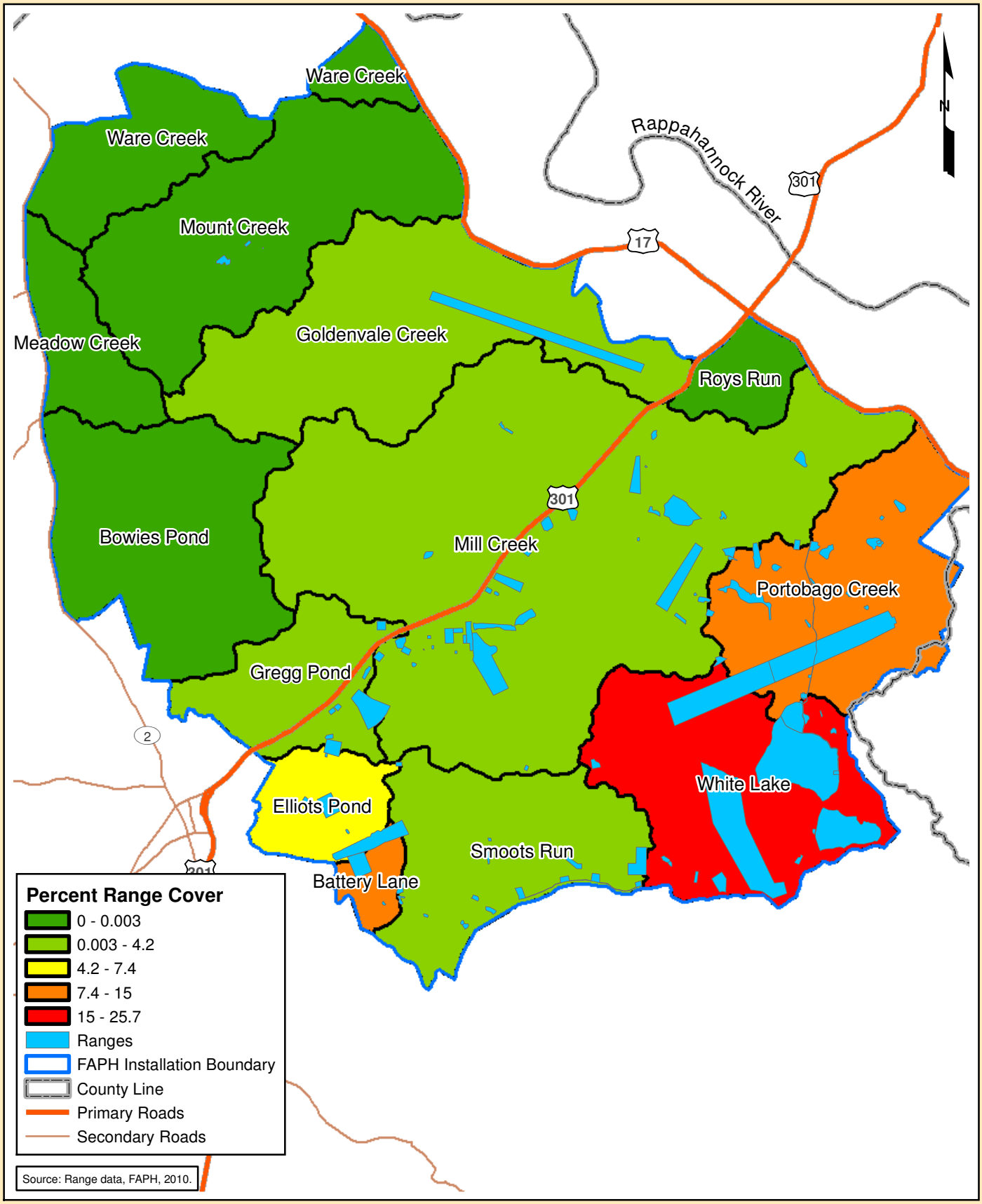
FAPH shooting and artillery ranges represent the single largest human activity within FAPH. Impacts associated with these ranges include the clearing of vegetation, erosion from vehicular and pedestrian traffic, and contamination from field maintenance on weapons and/or lead containing ordnance (FAPH 2009). These impacts can result in increased levels of nitrogen, phosphorus, and sediments within stormwater runoff. Therefore, the watersheds with the higher percentage of ranges are more vulnerable to environmental degradation.

There is a wide variation in the percentage of range occurrence throughout FAPH, varying from 0% for the Bowies Pond, Meadow Creek, Roys Run, and Ware Creek to over 25% for Whites Lake. Terrain, prevailing wind direction, and proximity to off-installation population are key factors for siting and operating the ranges. The Whites Lake, Battery Lane, and Portobago Creek watersheds have significantly higher range occurrence than the other watersheds. All of the watersheds with high range occurrence are located south and east of Route 301, away from population centers.

Quantifying the effect of the ranges on the watersheds was beyond the scope and capabilities of the vulnerability assessment and the DoD Protocol. Recommendations are provided in Section 8.0 to improve the assessment of the Ranges on watershed conditions. Therefore, in order to improve the assessment of risk that ranges pose to the FAPH watersheds, additional data and analysis are necessary. One process would be to conduct a qualitative analysis of the condition and type and frequency of use for each range. The analysis could be similar to that included in the DoD Protocol and allow for a rating of each range. The overall rating for each range within a watershed could be summed and compared to other watersheds to identify the priority for addressing the condition of the ranges and the impact they play on releasing nitrogen, phosphorus, sediment, and other pollutants into the surrounding streams.

Table 15: Range Cover Within the FAPH Watersheds

Watershed	Acres of Range Cover	Percent of Watershed Comprised of Range Cover	Ranking
Bowies Pond	0	0.00	1
Meadow Creek	0	0.00	1
Roys Run	0	0.00	1
Ware Creek	0	0.00	1
Mount Creek	225	0.03	1
Smoots Run	136	2.70	2
Goldenvale Creek	276	3.30	2
Mill Creek	704	3.30	2
Gregg Pond	128	4.20	2
Elliots Pond	134	7.40	3
Portobago Creek	818	13.20	4
Battery Lane	99	15.00	4
Whites Lake	1,754	25.70	5



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Percent Range Cover

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 15

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6.1.9 Impervious Surface

Table 16 presents percent of the watershed containing impervious surfaces, and the vulnerability ranking of each watershed. Figure 16 presents the ranking of the watersheds.

Table 16: Impervious Surface Within the FAPH Watersheds

Watershed	Acres of Impervious Surface	Percent of Watershed Comprised of Impervious Surface	Ranking
Ware Creek	24	0.62	1
Smoots Run	49	0.97	2
Mount Creek	90	1.20	2
Whites Lake	83	1.22	2
Portobago Creek	78	1.26	2
Battery Lane	8	1.29	2
Goldenvale Creek	115	1.37	3
Roys Run	19	1.54	3
Meadow Creek	34	1.64	4
Mill Creek	363	1.70	4
Bowies Pond	124	1.86	4
Elliots Pond	34	1.88	4
Gregg Pond	128	4.20	5

Note: Acreage and percentage based on GIS analysis

The watersheds with the highest percentage of impervious surface (Gregg Pond, Mill Creek, Meadow Creek, Elliots Pond, and Bowies Pond), which occur along or proximal to Routes 301 and 2, have the highest concentration of facility development (buildings, roads, and parking lots) on the installation. Impervious surface affect watersheds because they displace natural vegetation, decrease infiltration, increase total and peak runoff rates and volumes, and allow runoff to pick up pollutants from the impervious surface and carry them, largely unattenuated, into streams. A review of relevant literature suggests that there are different thresholds for percent impervious surface that relate to the health of the surrounding watershed. Such thresholds are not applicable to FAPH, as the installation remains highly undeveloped. Since passage of the Virginia Stormwater Management Act and the Chesapeake Bay Preservation Act, various stormwater structures and approaches including Best Management Practice (BMP) structures and Low Impact Development (LID) methods have been implemented with the more recent FAPH developments. The coverage and effectiveness of the BMPs and other existing surface water impoundments in mitigating impacts from impervious surface runoff is unknown and needs to be addressed further.

6.1.10 FAPH FY 2011-2012 Projects

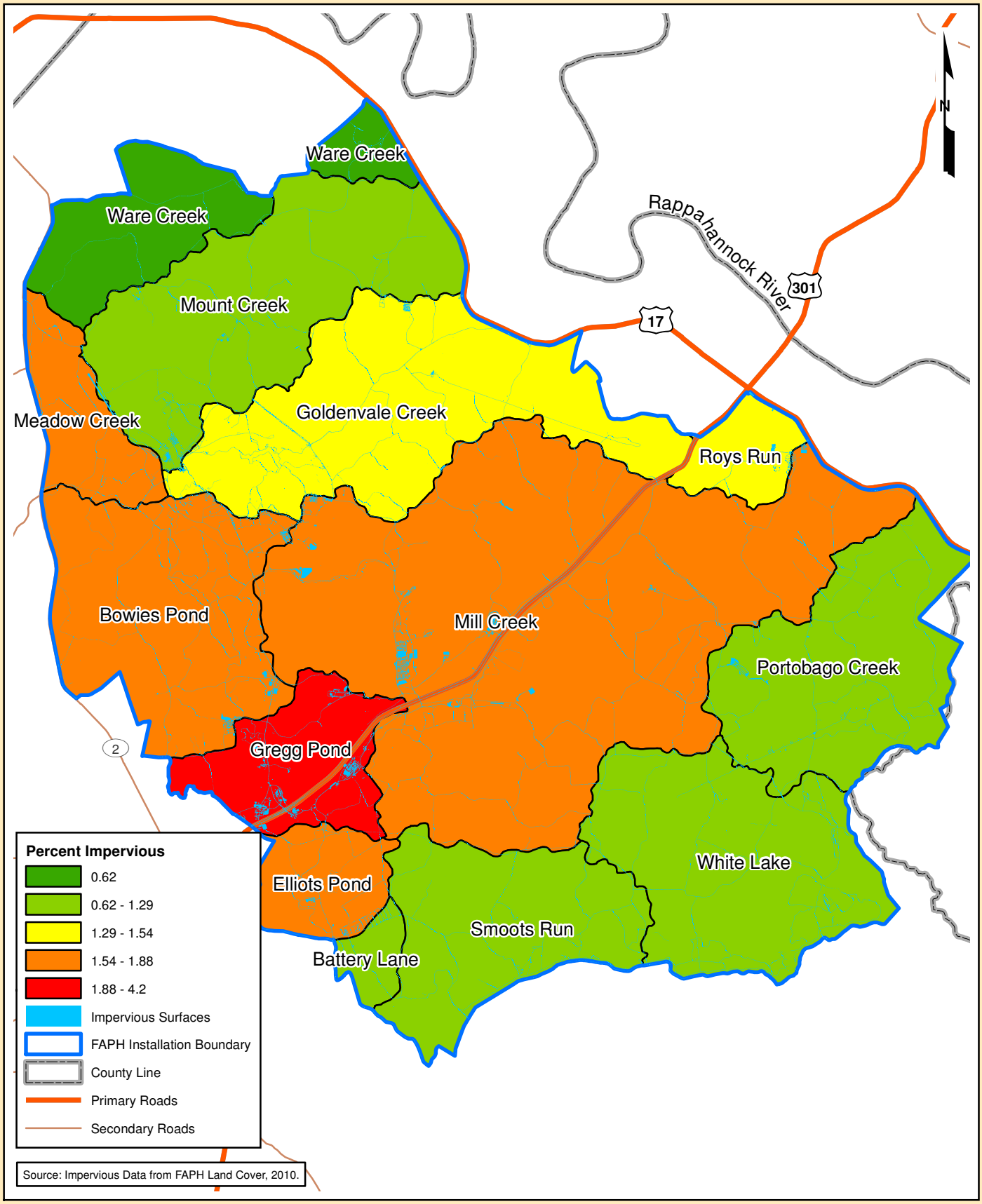
The final variable used in the WIVA/Vulnerability Assessment was the Fiscal Year 2011-2012 Projects data set provided by FAPH Master Planning Division and Directorate of Plans, Training, Mobilization, and Security (DPTMS), which identifies activities that have been completed in Fiscal Year 2011 and those scheduled for Fiscal Year 2012. The Projects in the data set, which mission training actions to construction of new installation buildings and infrastructure, represent a wide spectrum of potential impact to the watershed. The full nature and extent of the potential impacts associated with these Projects are beyond the scope of this analysis. However, this data set does provide a measure of recent and near future anthropogenic activity that may pose a stress to the watersheds.

Table 17 presents acres and percent of the watershed containing recent and near future projects, and the vulnerability ranking of each watershed. Figure 17 illustrates the location of the Projects and the ranking of the watersheds.

Table 17: Projects Listed by Master Planning Within the FAPH Watersheds

Watershed	Recent and Near Future Project Acres Within Watershed	Percent of Watershed Comprised of Recent and Near Future Projects	Ranking
Roys Run	0.00	0.00	1
Elliots Pond	0.00	0.00	1
Bowies Pond	33.77	0.51	1
Meadow Creek	15.23	0.73	1
Gregg Pond	51.34	1.69	1
Battery Lane	13.85	2.10	1
Goldenvale Creek	418.98	5.01	2
Mount Creek	729.07	9.71	3
Whites Lake	956.92	14.02	4
Smoots Run	888.36	17.66	4
Ware Creek	707.8	18.35	4
Portobago Creek	2,925.97	47.20	5

The vast majority of the Projects are located in the Portobago, Smoots Run, and Whites Lake watersheds located in the southeastern part of the installation and in the Ware Creek watershed along Route 17 in the northwestern part of the installation.



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Percent Impervious Surfaces

Fort A.P. Hill
Caroline County, Virginia

Figure 16

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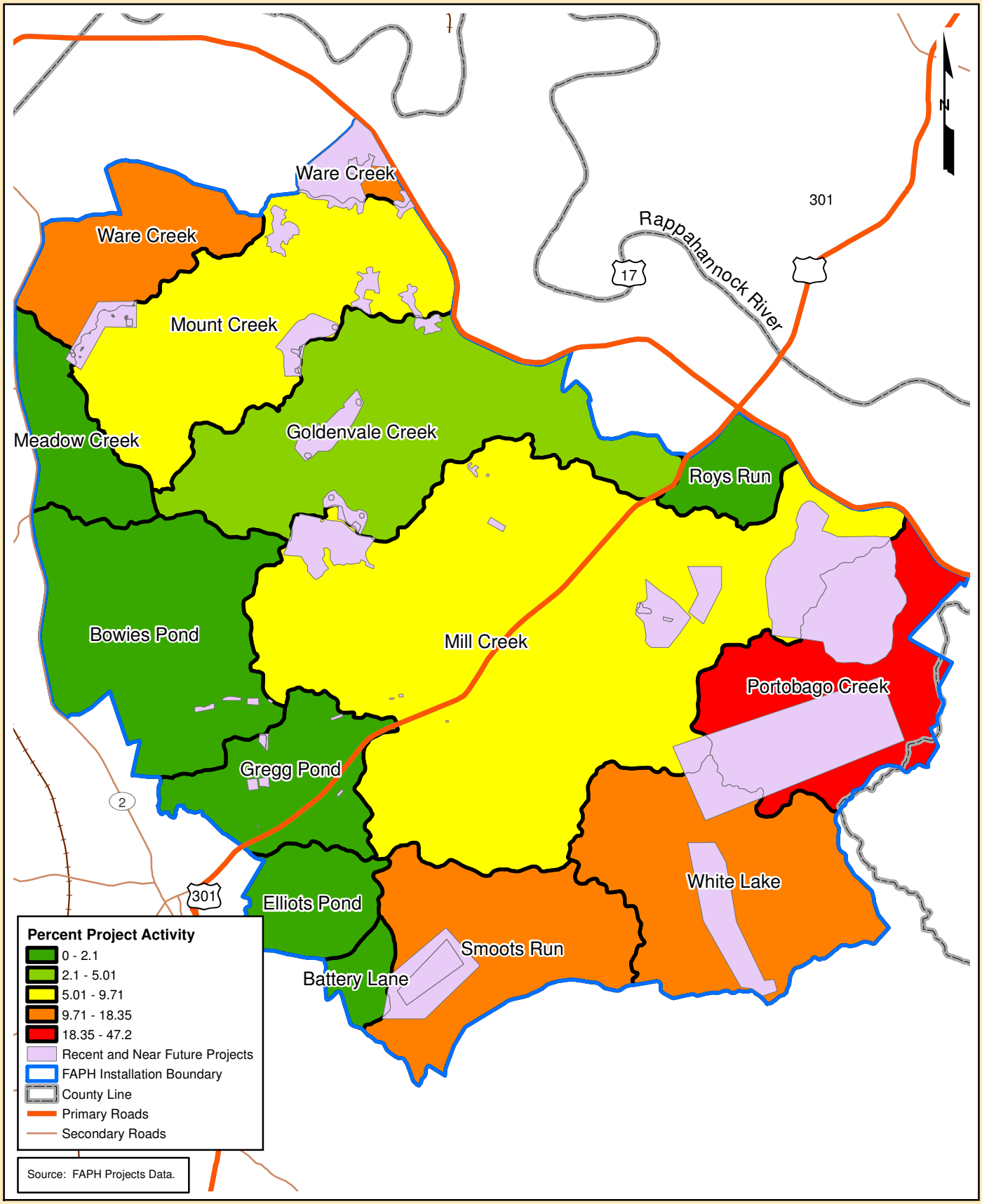

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Recent and Near-Future Projects

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 17

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6.1.11 Summary of WIVA and Vulnerability Assessment Results

The discussions presented above describe the findings of the WIVA and Vulnerability analysis. Specific results for each watershed are presented in more detail in Appendix A of this document.

The FAPH Watershed Inventory for Vulnerability Assessment (WIVA) was created by using Arc/GIS software and tools, several national data sets, and ten FAPH data sets or layers (Section 5.1) to create ten variables or metrics of watershed stressors/conditions and resources/sensitivities that would provide a measure of the overall condition and ecological health of the FAPH watersheds, identify and assess where watershed problems exist or are likely to occur in the future, and the natural and anthropogenic stresses of concern. It was beyond the scope of this WMP to conduct field reconnaissance for data collection to support the WIVA.

The following eight variables or metrics are watershed stressors/conditions:

- Percent of Watershed With Recent and Near Future Forest Management Activity (Fiscal Years 2009 to 2013)
- Slope
- Percent of Watershed with Highly Erodible Soils
- Watershed Average Curve Number (CN)
- Percent of Watershed with Range Cover
- Percent of Watershed with Impervious Cover
- Percent of Watershed With Anthropogenic Disturbance Within and Proximal (100-feet) to RPAs
- Percent of Watershed with Recent and Next Future Project Activity (Fiscal Years 2011 and 2012)

The following two variables or metrics are watershed conditions that have a net positive effect on watershed health:

- Percent of Watershed with Forest Cover
- Percent of Watershed with RPAs

For the vulnerability assessment, EEE used the data clusters from Jenks Optimization Method, which grouped the inventory data into five similar clusters to produce a relative ranking. For the variables Forest Cover and RPA, the watersheds with highest percentage of these resources were given the lowest vulnerability ranking of 1. Watersheds with lower forest cover and RPA percentages received progressively higher vulnerability rankings with the watersheds with the least forest cover and RPA percentage getting a vulnerability ranking of 5. For the stressors/conditions, the rankings were reversed. For example, watersheds with the highest range cover received a ranking of 5 and the watersheds with the least range cover received a ranking of 1.

These relative rankings were then entered into a watershed stressors/conditions matrix (Table 18A). The ranking numbers were then summed for each watershed, and priority levels were assigned to the watersheds based on the total numbers of points.

The analyses presented in Table 18A indicate that the Whites Lake and Portobago Creek watersheds are under the most stress and have the highest vulnerability to potential adverse changes whereas the Roys Run and Ware Creek watersheds have the least stress or lowest potential for adverse changes.

The causes or principal factors for the watershed rankings are highly variable. For example, the Whites Lake and Portobago Creek watersheds have a high vulnerability due to the high percentages of highly erodible soils and range cover, in spite of having medium to high percentages of forest cover and RPAs, and relatively low impervious surface. It is noted that the high percent of range cover also results in a high percentage of anthropogenic disturbance proximal to RPAs and that many of the Projects in these watersheds are related to the ranges. In contrast, the low vulnerability rankings of the Roys Run and Ware Creek watersheds are attributed to low slopes, a high percentage of forest cover and RPAs, and a low percentage of anthropogenic disturbance including range cover and impervious surfaces.

There are only two variables, Forest Management and Projects, which measure recent and near future stressors to watershed conditions. In order to provide better assessment of the potential recent and near future watershed vulnerability, the relative rankings of these two variables were double-weighted in Table 18B and the watershed rankings re-calculated. The analysis presented on Table 18B show no change in the most vulnerable watershed rankings. The most significant changes in the rankings were for the Mount and Ware Creek watersheds, which both were identified as more vulnerable due to the relatively high percentage of recent and near future Forest Management and Project activity in these watersheds.

The weighted watershed vulnerability rankings presented on Table 18B should be used for future management decisions as it provides a better measure of watershed vulnerability attributed to recent and near future anthropogenic activity being implemented by FAPH. There are opportunities to implement a wide variety of natural resource protection measures, as presented in the INRMP, with the new Forest Management and Project actions, that can ameliorate and mitigate potential adverse watershed impacts from the both the new and historical anthropogenic disturbances.

Finally, Table 19 and Figure 18 present the scoring applied to the FAPH watersheds and Table 20 provides a summary of this data for the York River and Rappahannock River watersheds. These data are further broken down into the Fort A.P. Hill watersheds described in Appendix A.

Table 18A: Unweighted Vulnerability Assessment Results

Watershed	Curve Number	Slope	Percent of Watershed with Highly Erodible Soils	Percent of Watershed With RPA	Percent of Watershed With Range Cover	Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	Percent of Watershed With Impervious Cover	Percent of Watershed With Forest Cover	Percent of Watershed With FY09-FY13 Forest Management Areas	Percent of Watershed With Recent and Near Future Projects	Total Jenks Score	Ranking
Whites Lake	2	3	5	3	5	5	2	3	3	4	35	**1**
Portobago Creek	1	3	5	2	4	4	2	5	1	4	31	**2**
Goldenvale Creek	2	4	2	5	2	3	3	2	5	2	30	**3**
Battery Lane	3	1	2	4	4	3	2	4	4	1	28	**4**
Meadow Creek	5	1	1	4	1	1	4	5	5	1	28	**4**
Mill Creek	1	5	5	2	2	2	4	2	2	3	28	**4**
Gregg Pond	3	1	1	4	2	2	5	5	3	1	27	**7**
Elliots Pond	3	2	2	1	3	3	4	3	4	1	26	**8**
Mount Creek	2	4	4	2	1	1	2	2	4	3	25	**9**
Bowies Pond	3	3	2	4	1	1	4	3	3	1	25	**9**
Smoots Run	2	2	3	1	2	2	2	4	2	4	24	**11**
Ware Creek	2	2	4	2	1	1	1	1	4	4	22	**12**
Roys Run	4	2	3	1	1	2	3	2	2	1	21	**13**

Table 18B: Weighted Vulnerability Assessment Results

Watershed	Curve Number	Slope	Percent of Watershed with Highly Erodible Soils	Percent of Watershed with RPA	Percent of Watershed Comprised of Range Cover	Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	Percent of Watershed Comprised of Impervious Cover	Percent of Watershed Comprised of Forest Cover	Percent of Watershed With FY09-FY13 Forest Management Areas	Percent of Watershed With Current and Near Future Projects	Total Jenks Score	Ranking
Whites Lake	2	3	5	3	5	5	2	3	6	8	42	**1**
Portobago Creek	1	3	5	3	4	4	2	5	2	10	39	**2**
Goldenvale Creek	2	4	2	5	2	3	3	2	10	4	37	**3**
Mill Creek	1	5	5	3	2	2	4	2	4	6	34	**4**
Battery Lane	3	1	2	4	4	3	2	4	8	2	33	**5**
Elliots Pond	3	2	2	2	3	3	4	3	8	2	33	**5**
Meadow Creek	5	1	1	3	1	1	4	5	10	2	33	**5**
Mount Creek	2	4	4	3	1	1	2	2	8	6	33	**5**
Ware Creek	2	2	4	4	1	1	1	1	8	8	32	**9**
Smoots Run	2	2	3	2	2	2	2	4	4	8	31	**10**
Gregg Pond	3	1	1	3	2	2	5	5	6	2	30	**11**
Bowies Pond	3	3	2	3	1	1	4	3	6	2	28	**12**
Roys Run	4	2	2	1	1	2	3	2	4	2	23	**13**

Table 19 Summary of Watershed Ranking

Watershed	Ranking
Whites Lake	1
Portobago Creek	2
Goldenvale Creek	3
Mill Creek	4
Battery Lane	5
Elliots Pond	5
Meadow Creek	5
Mount Creek	5
Ware Creek	9
Smoots Run	10
Gregg Pond	11
Bowies Pond	12
Roys Run	13

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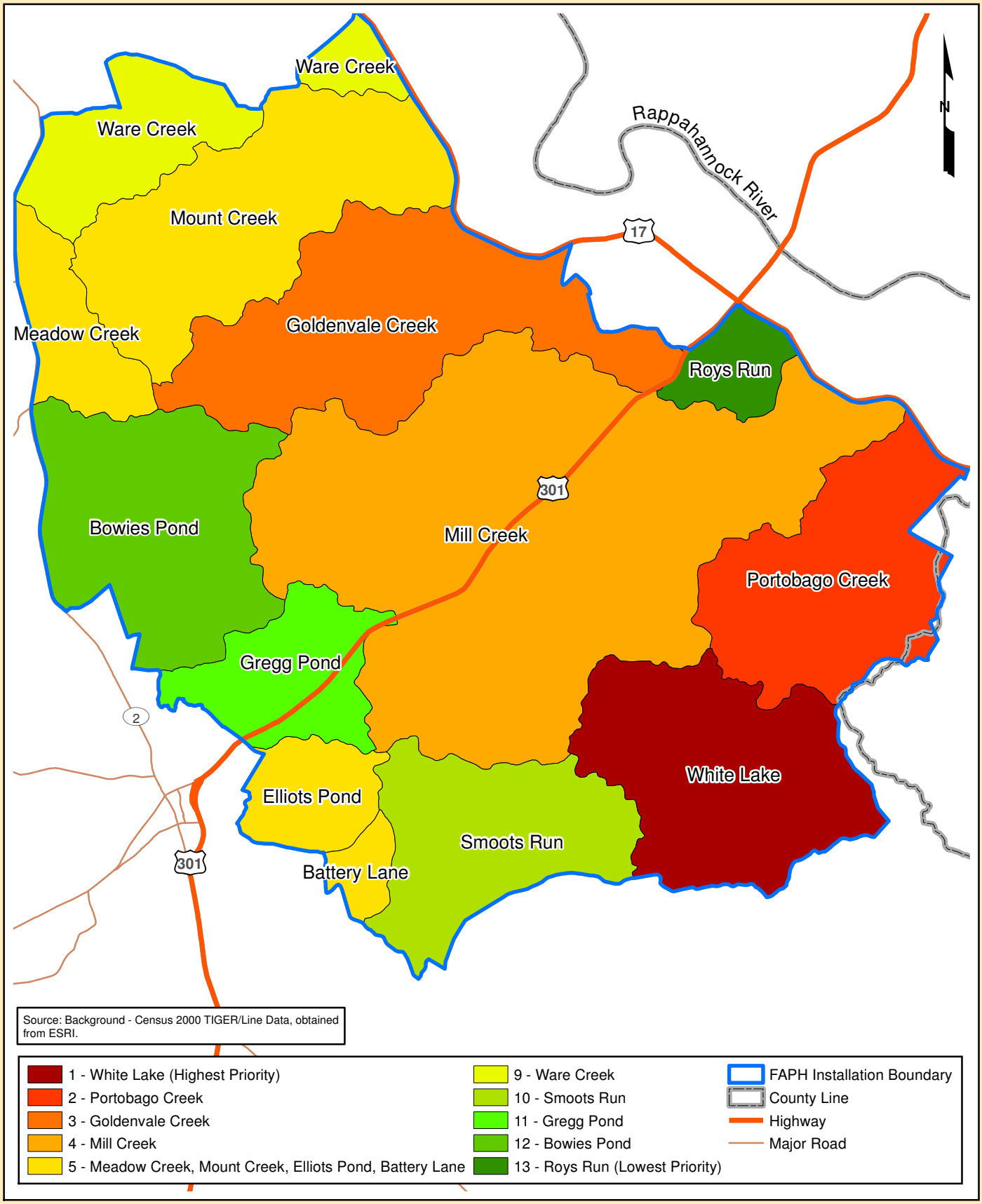

0 10,000 20,000 Feet

0 2,900 5,800 Meters

Watershed Priority Ranking

Watershed Management
Fort A.P. Hill
Caroline County, Virginia

Figure 18

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Table 20: Summary of WIVA Analysis for the Rappahannock and York Watersheds

	Acres	Percent of FAPH	WIVA Priority Ranking	Curve Number	Percent Highly Erodible Soils	Percent RPA	Percent Range Cover	Percent Recent and Near Future Forest Management Activity	Percent Recent and Near Future Project Activity	Percent of Watershed within 100 Feet of RPA with Anthropogenic Disturbance	Percent Impervious Cover	Percent Forest Cover
Battery Lane	659.57	0.88	5	66	28.44	16.10	15.00	25.81	2.10	0.92	1.29	74.50
Bowies Pond	6,675.24	8.94	12	66	26.65	17.65	0	15.62	0.51	0.25	1.86	82.12
Elliots Pond	1,812.10	2.43	5	65	26.57	19.96	7.40	24.75	0	0.70	1.88	79.24
Gregg Pond	3038.57	4.10	11	66	22.55	18.49	4.20	16.89	1.69	0.39	4.20	69.60
Meadow Creek	2,079.24	2.80	5	71	20.21	17.97	0	32.57	0.73	0.22	1.64	71.05
Smoots Run	5,029.55	6.70	10	64	45.42	20.85	2.70	11.84	17.66	0.43	0.97	76.31
Whites Lake	6,824.19	9.14	1	64	63.11	17.88	25.70	15.20	14.02	7.02	1.22	80.12
York Total	**26,118.46**	**35.01**		**66***	**38.84**	**18.57**	**8.62**	**17.17**	**7.50**	**2.12**	**1.76**	**77.49**
Goldenvale Creek	8,369.84	11.20	3	64	27.72	14.63	3.30	30.15	5.01	0.74	1.37	86.97
Mill Creek	21338.20	28.59	4	63	63.46	18.36	3.30	10.70	9.50	0.58	1.70	86.18
Mount Creek	7508.83	10.00	5	64	56.74	18.14	0	26.46	9.71	0.17	1.20	85.57
Portobago Creek	6198.63	8.30	2	63	68.14	18.28	13.20	6.76	47.20	2.86	1.26	69.27
Roys Run	1257.41	1.68	13	68	35.26	29.68	0	12.49	0	0.47	1.54	83.55
Ware Creek	3,856.66	5.17	9	64	52.54	16.84	0	27.48	18.35	0.11	0.62	90.06
Rappahannock Total	**48,529.57**	**64.99**		**64***	**55.26**	**17.84**	**3.71**	**17.37**	**14.03**	**0.80**	**1.42**	**84.30**
FAPH Total	**74,658.03**	**100**		**65**	**49.81**	**18.09**	**5.42**	**17.30**	**11.74**	**1.26**	**1.54**	**82.00**

* - Average Curve Number of subwatersheds

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6.2 Department of Defense Protocol

The DoD *Installation Watershed Impact Assessment Protocol* was designed to assist DoD installations in complying with TMDLs and drinking water requirements. The objective of the protocol is to improve compliance by effectively identifying, assessing, and prioritizing installation site activities relative to the receiving environmental conditions (including water, air, and natural and cultural resources); to implement innovative technologies and sustainable design practices to mitigate current and potential environmental impacts before they have an effect on training; and to seek partnership opportunities whenever possible to reduce costs and leverage resources. In addition, the DoD Protocol considers current and potential impacts from surrounding land-use owners, specifically what pollutant loads are draining onto or from the property (DoD 2005).

Because this was the first opportunity FAPH has had to incorporate the DoD Protocol into its environmental operations, its inclusion in the WMP was meant to develop a baseline inventory through which to identify management concerns and monitor future changes within FAPH.

The DoD Protocol also served to support the WIVA included in this document. The WIVA provides general information on the FAPH watersheds. The DoD Protocol identifies specific activities and conditions that exist within each watershed. These activities and conditions are rated to provide some measurement of their impact to the surrounding watershed. This information will aid future Army decisions by identifying specific targets within problematic watersheds that should be addressed and by ranking the priority of each watershed for future management actions.

The DoD Protocol spreadsheets include columns that address options for mitigating impacts, defining mitigation or BMPs, cost data, and potential partners. These columns were not completed as part of the WMP. These columns are dedicated to addressing major impacts identified by the DoD Protocol. The interdisciplinary team's review of the spreadsheets did not identify any major impacts that required such action. Furthermore, this is the first time these spreadsheets have been completed for the FAPH watersheds. During future revisions, it may be appropriate to add information to these columns.

6.2.1 Findings of the Department of Defense Protocol

During the interdisciplinary review of the DoD Protocol spreadsheets, one of the most common findings was the relatively low ratings that all of the activities occurring at FAPH received. The high ratings (twos and threes), that were included on Form 3 of the DoD Protocol, highlighted permitted activities. These ratings also identify activities that could result in greater impacts if there were changes made in the operations at FAPH.

In terms of the surface water impacts, the spreadsheets focused more on point source pollution than nonpoint source pollution. Point sources within FAPH are well documented and limited to locations covered by the installation's VPDES permit (see Section 3.3.2). The spreadsheets were limited in their ability to evaluate FAPH nonpoint

source pollution issues and management. The spreadsheets, however, highlighted the Army's efforts to limit point source pollution within FAPH and prevent water quality problems from those discharges.

Another issue encountered during the completion of the DoD Protocol forms was the subjective nature of the analysis. While the WIVA is based on specific acreages and distances, the DoD Protocol relies on subjective analysis by those individuals completing the forms. While this invites the type of interdisciplinary analysis that was included in the development of this document, the team recognized that it could be difficult to replicate its analysis when the forms are updated. Therefore, this document serves as documentation of some of the decisions that were made during this process to inform future revisions of the DoD Protocol spreadsheets for the FAPH watersheds.

Very few activities within FAPH are consistent across all 13 watersheds. Activities of a similar nature, such as a specific training exercise, may occur in very different environmental settings. Similarly, watersheds with very similar environmental conditions may support training exercises that result in different impacts. Given the size of the DoD Protocol forms, it was not possible to make some of these distinctions.

Given these general findings, the following sections discuss some of the activities and/or impacts included in the DoD Protocol spreadsheets that received notable ratings. The headings for these sections relate directly to the column headings used in the DoD Protocol spreadsheets which are included in Appendix A of this document.

6.2.1.1 Runoff from Nonpoint Sources that Contain Sediment or Other Pollutants

During the completion of the DoD Protocol spreadsheets, almost any activity that was known to occur within a given watershed was given a rating related to runoff from nonpoint sources. The need for the rating was based on the understanding that any activity occurring on an impervious surface or compacted pervious surface would have some level of runoff. Many areas within each watershed received a rating of "1" related to this topic. Some of the more developed areas within the watershed received a rating of "2". These sites received a higher rating due to the consolidated area in which pollutants could accumulate and be transported in stormwater runoff. The rating also indicates that these activities often include some type of BMP to capture pollutants and/or runoff before they enter the watershed. These activities include: buildings, dining facilities, heavy vehicle washing facilities, housing areas, motor pools and maintenance areas, and parking lots.

Filling and grading is another activity that received special consideration under this topic. In some cases, these activities could be of a great enough scale to impact resources outside of FAPH. After further consideration, however, it was determined that these activities are always accompanied by erosion and sediment control plans that limit the impact. With these measures in place, much of the filling and grading that would occur within FAPH would meet the definition of a "1" rating, per the DoD Protocol. The

original rating of "2" was retained to highlight the concern around filling and grading activities.

Overall, the review of this category met the expectations of the FAPH interdisciplinary team. There are numerous nonpoint sources located throughout the watershed. The most prominent sources are addressed with BMPs. The development of a BMP database will allow the Army to assess the success of these structures and determine the location for future BMPs.

6.2.1.2 Pollutants Discharged from this Activity Listed on the State/EPA 303(d) List (TMDL) for this Waterbody

As noted earlier in the document, the Army is working with DEQ to revise impairments listed on the Virginia 303(d) list. Therefore, the review of this topic focused on the Chesapeake Bay TMDL. During the completion of the DoD Protocol spreadsheets, almost any activity that was known to occur within a watershed was given a rating related to the discharge of nitrogen, phosphorus, or sediment. Although most of the activities considered in the analysis receive a rating of "1", there were a few activities that received a "2" and require additional discussion.

The wastewater treatment plant in the Mill Creek watershed received a rating of "2" because it is a point source and the pollutants included in its permitted release have been found to contribute to impairments monitored by DEQ in the region. A rating of "3" was determined to be excessive because the plant is a permitted discharge that does not have any permit violations.

Other activities located throughout FAPH that were given a rating of "2" were the vehicle washing and motor pool activities. These activities received their rating based on the presence of nitrogen and phosphorus, both of which are included in the Chesapeake Bay TMDL. Although these are non-discharging systems, the interdisciplinary team recognized the potential for releases and the importance such releases have to the Chesapeake Bay TMDL. Future management efforts aimed at meeting the TMDL should target these areas as locations of focused improvements.

The DoD Protocol also rated the filling and grading activities located throughout FAPH as a "2". The process for achieving this rating was similar to the vehicle washing and motor pool activities. Although filling and grading activities are accompanied by appropriate permits and erosion and sediment control BMPs, the interdisciplinary group recognized the potential for releases and the importance such releases have to the Chesapeake Bay TMDL.

6.2.1.3 Bank Erosion, Steep Slopes, and Riparian Buffers

There are several categories included in the DoD Protocol spreadsheets that address visible signs of bank erosion, scouring, or unstable stream banks; adequate riparian buffers; and steep slopes or visible signs of erosion. During the completion of the DoD Protocol spreadsheets, almost any activity that was known to occur within a given watershed was given a rating of "1" for this category. This rating was selected to recognize that stream conditions throughout FAPH are not ideal. In any location, there

could be nearby streams that exhibit visible signs of the conditions listed above. Increased rates of erosion could release more sediment into the watershed and impact the goals of the Chesapeake Bay TMDL. Pinpointing these locations was found to be beyond the scope of the DoD Protocol but highlights the need for continued monitoring throughout the watershed.

6.2.1.4 Endangered Species and Cultural Resources

There are two columns in the DoD Protocol spreadsheets that focus on endangered species and cultural resources, respectively. These columns highlight the effort made by the protocol to develop an overall baseline of conditions within a given watershed. The rating for these columns was unique in that almost every activity was rated a "0" despite the presence of numerous resources located throughout FAPH.

After careful review, the interdisciplinary team that worked to complete the DoD Protocol spreadsheets determined that the existing protection Army regulations afford these resources within FAPH would prevent any impact from occurring to these resources. The only activity that could result in an impact to endangered species was identified for the "dismounted training" activity. It was determined that during a dismounted training event, an individual could wander into an area that housed one of these resources and could accidentally inflict some minimal impact.

The review of these categories reinforced the importance the Army places on these resources within FAPH. Any change to these ratings in future revisions of the DoD Protocol spreadsheets should be immediately addressed, as it would indicate that an activity is in violation of federal, state, and Army regulations.

6.2.1.5 The Activity Requires an Environmental Plan

This category was very important to the interdisciplinary review. Many of the impacts that occur within FAPH, and were captured on the DoD Protocol spreadsheet, are managed through a permit or plan. Therefore, for many of the "1"s and "2"s that were recorded on the spreadsheets, there is a corresponding rating for this category. This rating also reflects that the potential impact/rating of the activity is reduced by an environmental plan/permit. For example, the pesticide facility could have a very high impact/rating if it was not managed by trained professionals under the guidance of improved plans.

The completion of these spreadsheets has already resulted in an internal review of some activities and there corresponding plans, to ensure the plans accurately reflect the current level of activity. During future updates to these spreadsheets, if an activity receives a rating of "2" or "3", and does not have a corresponding rating for this category, immediate action should be taken to develop the necessary plans or permits.

6.3 Summary of DoD Protocol

As part of this WMP, FAPH completed the DoD Protocol spreadsheets to comply with Army requirements. The spreadsheets highlighted FAPH compliance with relevant laws and regulations through its permits and environmental plans. The most common activities that received the highest scores (indicating highest impacts) within the 13 watersheds were:

- Filling and grading
- Gasoline, diesel, JP8 fuel points & POL training berms
- Construction sites
- Large arms impact areas
- Maintenance of Roads

It should be noted that the large arms impact areas only occur in the southern watersheds. The other four activities occur throughout the 13 watersheds.

In order to best measure the impact such activities have on the FAPH watersheds, future revisions of the DoD Protocol spreadsheets should consider modifying or adding additional activities or impact topics to focus on specific issues at FAPH.

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7.0 Conclusions

Both the WIVA/vulnerability assessment and DoD Protocol provide large scale analyses of the 13 FAPH watersheds. The WIVA produced 10 variables of watershed stressors/conditions that help characterize vulnerability of the watersheds to potential environmental change that may result from anthropogenic activities. The vulnerability assessment provided a comparative ranking of the FAPH watersheds that can be used to assess where additional land use controls such as stormwater BMPs may be best applied and to help future land management planning.

The weighted watershed vulnerability rankings presented on Table 18B should be used for future management decisions as it provides a better measure of watershed vulnerability attributed to recent and near future anthropogenic activity being implemented by FAPH. There are opportunities to implement a wide variety of natural resource protection measures, as presented in the INRMP, with the new Forest Management and Project actions, that can ameliorate and mitigate potential adverse watershed impacts from the both the new and historical anthropogenic disturbances.

The causes or principal factors for the watershed rankings are highly variable, but most closely follow the range cover rankings. For example, the Whites Lake and Portobago Creek watersheds have a high vulnerability due to the high percentages of highly erodible soils and range cover, in spite of having medium to high percentages of forest cover and RPAs, and relatively low impervious surface. The high percent of range cover also results in a high percentage of anthropogenic disturbance proximal to RPAs. In addition, many of the recent and near future Projects in these watersheds are related to the ranges. In contrast, the low vulnerability rankings of the Roys Run and Ware Creek watersheds are attributed to low slopes, a high percentage of forest cover and RPAs, and a low percentage of anthropogenic disturbance including range cover and impervious surfaces.

As stated in Section 5.2, the vulnerability of a watershed is a relative rather than absolute measure. This analysis does not provide estimates of the probability of change. Nor does the analysis attempt to address the equilibrium state or potential for a watershed to undergo a significant change or a short period of time. It does provide a screening tool for identifying the most and least vulnerable watersheds in a given area, which may be used to evaluate the potential effect of management decisions (i.e., land use changes) on the water quality and ecological systems within the watershed.

The DoD Protocol identified activities within each watershed that pose a potential risk to water quality and watershed health. The most common activities that received the highest scores (indicating highest impacts) within the 13 watersheds were:

- Filling and grading
- Gasoline, diesel, JP8 fuel points & POL training berms
- Construction sites
- Large arms impact areas
- Maintenance of Roads

Both of these analyses were limited by the available input and the scope of each analysis. Section 8.0 presents recommendations for improvement of the analyses.

8.0 Recommendations

Recommendations are provide below to improve the scope and usefulness of the WIVA/Vulnerability Assessment and DoD WIA. Many of these recommendations have been introduced and discussed throughout this document. Recommendations are also provided to prepare for the Chesapeake Bay TMDL and the Watershed Implementation Plan.

8.1 WIVA/Vulnerability Assessment

The WIVA presented in this document included 10 metrics or variables of watershed vulnerability. In both the EPA ReVA program and the Temple WIVA, the data inputs include both stressors/conditions and resources/sensitivities. All of the variables used in the FAPH WIVA were treated as stressors/conditions, except percent forest cover and RPA, which are considered to be resources/sensitivities that are affected by and mitigate the effect of the stressors. The vulnerability assessment would be significantly improved if other high value resources such as the following were included in the WIVA:

- Threatened and endangered species protection zones
- Other high value habitat terrestrial and aquatic habitat
- Wildlife Refuge
- Rare forest communities
- Cultural Resource Sites

Potential threats to these high value resources/sensitivities from the watershed stressors/conditions could then be assessed as part of the Vulnerability Assessment.

The vulnerability assessment could be further improved by incorporating some measure of the relative impact of the various Ranges, and the recent and near future Forest Management and Project activity. One process would be to conduct a qualitative analysis of the condition and type and frequency of use for each range. The analysis could be similar to that included in the DoD Protocol and allow for a rating of each range. The overall rating for each range within a watershed could be summed and compared to other watersheds to identify the priority for addressing the condition of the ranges and the impact they play on releasing nitrogen, phosphorus, sediment, and other pollutants into the surrounding streams. As discussed in Sections 5.0 and 6.0, the Forest Management and Project data sets contain a wide spectrum of actions that have highly variable effects on watershed conditions. For example, many of Forest Management activities are designed to maintain or improve the health and condition of the installation forests. Similarly, the actions in the Project data set range from new development including buildings, roads, and parking areas that will have a measure effect on impervious surfaces, and the quantity and quality of stormwater runoff, to changes in how certain areas are used and managed, the effect of which is difficult to determine.

The use of anthropogenic disturbance proximal to RPAs and streams also could be enhanced by the ongoing FAPH efforts to improve the stream network delineation.
The use of Curve Number in the assessment has limited discriminatory value and needs to be further evaluated given the apparent inconsistency between Curve Number, and percent highly erodible soils, range cover, and impervious surface. Although the erodibility of soil does not directly correlate with the hydrologic soil groups used in the Curve Number generation, a better correlation was anticipated. Conversion of the FAPH land cover information to the NRCS land use categories could be improved by further discrimination of FAPH land cover and incorporating land use data.

The WIVA/Vulnerability Assessment could also be improved by developing inventories for other stressors and conditions. One key component that was outside the scope of both analyses was consideration of the drainage areas that feed into ponds and impounded waters within FAPH. These waters have drainage areas that cover large expanses within the installation. Runoff into these waters is either captured in a closed system or held for an extended period of time, during which pollutants are diluted or absorbed into the lake bed. Although this presents its own management concerns for the individual lake, it prevents a large quantity of stormwater runoff and its associated pollutants from moving through the watershed, much like a structural BMP.

Similarly, the BMP database currently under development should be included in this analysis. A future effort would be to assess the functionality and pollution reduction capacity of the existing impoundments and BMPs. These efforts would also help FAPH demonstrate that the installation is not a significant source of pollutants contributing to the Chesapeake Bay and Rappahannock River impairments.

Other stressors/conditions that could be inventoried and assessed include:

- More detailed analysis of the hydrogeomorphic features (drainage density, stream ordering, hypsomatic curves, and slopes) of each watershed
- Continuing to survey wetlands and eventually convert the NWI Wetland analysis to an analysis based on ground-truthed wetlands
- Develop and conduct a qualitative analysis of base facilities/site including airfield and aviation facilities, ammunition storage, drainfields, landfills and lagoons, petroleum product storage and use facilities, washracks and oil/water separators, Peumansend Regional Jail, Virginia Department of Transportation sand and salt storage, Caroline County Recycling Center, cantonment facilities, and other historical activities that may be a pollution source to better document the impact these features have on the surrounding watersheds
- Incorporate effluent data from the Wilcox and Cooke STPs
- More detailed mapping of silvicultural practices
- Mapping and assessment of Agricultural Leased Land
- Development and assessment of potential developable land for each watershed or some other measure of anticipated changes in FAPH land cover and use.

The main area of improvement for the DoD protocol analysis is to modify the spreadsheets to more accurately capture the activities and impacts at FAPH. In addition, the Total Activity Burden Score (TABS) for each watershed could be summed to determine an overall activity score for each watershed.

8.2 Preparation for Chesapeake Bay TMDL and Watershed Implementation Plan

FAPH and all federal facilities with the Chesapeake Bay watershed will be required to comply with the provisions of the TMDL and the Phase II Watershed Implementation Plan when it is developed. On April 29, 2011, EPA issued a Guide for Federal Lands and Facilities Role in the Chesapeake Bay Jurisdictions and Phase II Watershed Implementation Plans. Although it is beyond the scope of this document to analyze this guidance, and it is unknown how the TMDL pollutant reductions will be implemented, there is an opportunity for FAPH to prepare for their implementation. The Site-Specific TMDL Gap Analysis Report for Fort A.P. Hill prepared by the National Defense Center for Energy and Environment (NDCEE) in November 2010 identified multiple data needs for the Chesapeake Bay TMDL. The following discusses a few of the more critical data needs.

FAPH's ongoing effort to monitor water quality and aquatic life in the installation waters should continue and be expanded, as necessary, in order to support a determination of natural conditions for most of the identified impairments on FAPH and development of revised water quality standards for the water bodies. If/when pollution reductions are imposed on FAPH, these monitoring data can be used to determine compliance with the reduction goals. The focus of FAPH's future effort should probably be phosphorus, nitrogen, and sediment loading because these are the pollutants of concern in the Chesapeake Bay TMDL. Other parameters of concern due to existing impairments of FAPH streams and downstream rivers include: pH, dissolved oxygen, mercury and arsenic, and e. Coli and fecal coliform.

As mentioned in Section 8.1 above, the functionality and pollution reduction capacity of the existing FAPH impoundments and BMPs should be determined to demonstrate that the installation is not a significant source of pollutants contributing to the Chesapeake Bay, Mattaponi, and Rappahannock River impairments, and that significant stormwater controls are already in place. This information can also be used to develop facility specific improvement plans that could be implemented to enhance pollution reduction.

Lastly, FAPH should continue to document the management practices for the various potential specific pollution sources such as the drainfields, lagoons, washracks, and oil/water separators, and stormwater controls to demonstrate sound environmental management and compliance with applicable best management practices.

8.3 Adaptive Watershed Management

Watershed planning is an iterative, collaborative, and adaptive process requiring integration of multiple disciplines and programs that affect a watershed health and integrity. The installation's INRMP is the basis for all natural resource management programs at FAPH. Once finalized, this Watershed Management Plan should be incorporated into the INRMP.

This Watershed Management Plan and the previous plan both addressed the entire FAPH watershed but also included more detailed analyses of the specific sub-watersheds on the installation. The previous plan focused on water quality and aquatic life measures whereas this plan assessed potential watershed vulnerability and impacts associated with installation activities. These two plans should be combined into a comprehensive summary of both documents. The WIVA/Vulnerability Assessment and DoD protocol analysis should probably be a separate document that is summarized and referenced in the Watershed Management Plan.

Finally, FAPH may wish to re-organize the Watershed Management Plan to specifically address the eight-sixth order HUC watersheds identified in the 303(d) and 305(b) IR. This would facilitate FAPH response to DEQ and DCR regulatory findings and requirements on the sixth order HUC watersheds.

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9.2 Glossary

Anthropogenic: caused or produced by humans.

Aquatic Macroinvertebrates: animals that have no backbone and are visible without magnification. Found in aquatic environments and include such animals as crayfish, mussels, aquatic snails, aquatic worms, and the larvae of aquatic insects.

Best Management Practices (BMPs): schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States, BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bioindicator: species used to monitor the health of an environment or ecosystem. They are any biological species or group of species whose function, population, or status can be used to determine ecosystem or environmental integrity.

Cantonment: temporary or semi-permanent military quarters.

Fall Line: in geomorphology, a fall line marks the area where an upland region (continental bedrock) and a coastal plain (coastal alluvia) meet.

Land-disturbing Activities: "…any land change that may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands in the Commonwealth, including, but not limited to, clearing, grading, excavating, transporting and filling of land…" as pertaining to construction activities (DCR 1992).

Low Impact Development: a strategy concerned with maintaining or restoring the natural hydrologic functions of a site to achieve natural resource protection objectives and fulfill environmental regulatory requirements.

Nonpoint source pollution: comes from a source that does not have a single point of origin. The pollutants generally are carried off the land by runoff from stormwater following rain events. As the runoff moves over the land, it can pick up both natural and human-related pollutants. These pollutants are deposited into surrounding creeks, streams, rivers, lakes, and bays.

Point source pollution: any single identifiable source of pollution from which pollutants are discharged, such as a pipe, ditch, ship, or factory smokestack. It includes any pollution that may be traced back to a single point of origin. Point source pollution is typically discharged directly into a waterway and often contributes flow across all conditions, including both droughts and floods.

Tier I Species: The Endangered Species Act (ESA) divides listing actions into Tiers 1, 2, and 3, with the highest priority being Tier 1. Tier 1 species face a significant and imminent risk to their well-being.

Total Maximum Daily Load (TMDL): the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards, as outlined in the U.S. Clean Water Act.

Water Quality: a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose.

Watershed: the area of land where all of the water that is under it or drains off of it goes into the same place.

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Appendix A: Watershed Analysis

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Appendix A presents a more detailed presentation of the results of the WIVA/Vulnerability Assessment and DoD Protocol for each FAPH watershed. A summary table of the WIVA/Vulnerability Assessment results and the DoD protocol spreadsheets are included for each subwatershed

The summary WIVA tables present the environmental data obtained from the WIVA for each watershed, including CNs, percent of the watershed classified as highly erodible, percent of the watershed classified as wetlands, percent of the watershed comprised of active ranges, percent of the watershed area with anthropogenic development within 100, 200, 600, and 1,000 feet of the watershed streams, percent covered by impervious surface, and percent forest cover within each watershed. The summary tables also contain other basic data for the watershed.

Form 1 from the DoD protocol is presented below. This form summarizes the water bodies at FAPH identified as impaired by DEQ in the Final 2010 305(b)/303(d) Water Quality Assessment Integrated Report, including the HUC, the impaired designated uses, and the parameters resulting in the impairment. It is noted that the impairment listing for Beverly Run in the Whites Lake watershed, is listed only as river miles even though the upstream portion of the impairment section goes through Whites Lake reservoir on FAPH.

Broaddus Pond located along a portion the southwest installation boundary immediately downstream of Gregg Pond watershed is listed as 2B (waters are of concern to the state but no Water Quality Standard exists for a specific pollutant, or the water exceeds a state screening value or toxicity test). Broaddus Pond was found fully supporting for fish consumption with an observed affect (mercury was found in fish tissue samples) and fully supporting for aquatic life. Recreational and wildlife uses were not assessed.

Maracossic Creek, downstream of Broaddus Pond, was listed as 2A (waters are supporting all of the uses for which they are monitored). Maracossic Creek is the only stream within or adjacent to FAPH that is not impaired but has enough data for DEQ to determine that it is supporting all of its monitored and intended uses. Per the DoD Protocol, all streams with such data should be included in the analysis. Therefore, although the Maracossic Creek is not impaired, it is included in this appendix.

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Form 1. Summary of the Installation's Receiving Watersheds and Associated Waterbodies

Installation Name	Fort A.P. Hill
State	Virginia
County	Caroline
Zip Code	22427
Name of 8-digit HUC watershed(s)	**8-digit HUC(s)**
Rappahannock River	02080104
York River	02080107
Mattaponi	02080105

List of the Receiving Watersheds or Waterbodies *Listed as Impaired* by the Federal or State Regulators that crosses or is within the perimeter of the installation

Name of waterbody	HUC, 8- to 16-digit, or state Identifier	List of impaired designated uses	Summary of impairments of concern (from Form 2)	Watershed Priority Score (WPS) (from Form 2)
Beverly Run	020801050402	Aquatic Life	pH	9
Bowies Pond	020801050205+	Fish Consumption	Mercury in fish tissue	9
Goldenvale Creek	020801040203	Aquatic Life	Dissolved oxygen/pH	9
Mill Creek	020801040202	Aquatic Life	pH, macrinvertebrates	9
Mount Creek	020801040201	Aquatic Life	pH	9
Portobago Creek	020801040301	Aquatic Life, Recreation	Dissolved oxygen/E. coli	11
Ware Creek	020801040201+	Aquatic Life	pH	9

List other significant waterbodies associated with the installation that *are not listed as Impaired* by the Federal or State Regulators

Name of waterbody	HUC, 8- to 16-digit, or state Identifier	List of impaired designated uses	Summary of impairments of concern (from Form 2)	Watershed Priority Score (WPS) (from Form 2)
Maracossic Creek	0208010504			8

Notes: Impairments taken from 2010 305(b)/303(d) Water Quality Assessment Integrated Report
Table only includes waters identified as being impaired and/or those with sufficient data to determine support of any designated uses

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Battery Lane

Table A-1: Battery Lane Watershed	
Watershed	Mattaponi
HUC Code	YO51
Acres	659.57
Percent of FAPH	0.88
Weighted WIVA Priority Ranking	5
Curve Number	66
Percent Highly Erodible Soils	28.44
Percent of Watershed with RPA	16.10
Percent of Watershed with Range Cover	15.00
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.92
Percent of Watershed with Impervious Cover	1.29
Percent of Watershed with Forest Cover	74.50
Percent Recent and Near Future Forest Management Activity	25.81
Percent of Watershed With Recent and Near Future Projects	2.1

The Battery Lane watershed is located at the southwestern edge of FAPH. It is an estimated 659.57 acres in size, comprising just 0.88 percent of FAPH. A majority of the watershed (57 percent) is under forest cover, with significant herbaceous open land cover (18 percent) and mixed cover (18 percent). A small impoundment is located on FAPH at the watershed outlet. Surface water from the impoundment enters Maracossic Creek approximately 3,200 feet to the southwest.

WIVA/Vulnerability Assessment

Based on the WIVA, the Battery Lane watershed is a Priority 5 watershed. Slopes and highly erodible soils are low and the CN is average for the watershed, indicating that the watershed will produce less runoff and sediment per area than other watersheds. Additionally, there is a relatively low quantity of impervious surface with most of the anthropogenic disturbance occurring in the headwaters of the watershed. The impoundment at the watershed outlet will mitigate any FAPH related impacts to downstream waters.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their Total Activity Burden Score (TABS).

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. Most of these activities occur within the upper portion of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			11
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Bowies Pond

Table A-2: Bowies Pond Watershed	
Watershed	Mattaponi
HUC Code	YO47
Acres	6,675.24
Percent of FAPH	8.94
Weighted WIVA Priority Ranking	12
Curve Numbers	66
Percent Highly Erodible Soils	26.65
Percent of Watershed with RPA	17.65
Percent of Watershed with Range Cover	0.00
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.25
Percent of Watershed with Impervious Cover	1.86
Percent of Watershed with Forest Cover	82.12
Percent Recent and Near Future Forest Management Activity	15.62
Percent of Watershed With Recent and Near Future Projects	0.51

The Bowies Pond watershed is located along the western boundary of FAPH. It is an estimated 6,675.24 acres in size, or 8.94 percent of the FAPH land area. Approximately 60 percent of the watershed is covered by forest and 22 percent is covered by mixed cover.

Bowies Pond is a 30 acre impoundment at the watershed outlet along Route 2. Discharge from Bowies Pond enters Campbell Creek and the Mattaponi River approximately 4,000 feet to the east-southeast. Approximately 420 acres of agricultural and low density residential use land outside the installation along Route 2 also drain to Bowies Pond. Analysis of these activities is outside the scope of this study. In general, agricultural practices can have a measureable effect on water quality and may contribute to the mercury in fish tissue. Because mercury in fish tissue is the basis for the impairment designation of Bowies Pond, it is important that FAPH monitor water quality in the area to ensure these activities are not having a negative impact on aquatic resources.

WIVA/Vulnerability Assessment

The WIVA/Vulnerability Assessment determined Bowies Pond to be a Priority 12 watershed. CNs, slopes, and percent of the watershed covered by NWI wetlands are average, highly erodible soils are low, and most of the other metrics used in the analysis are favorable. Almost all of the anthropogenic disturbances occur greater than 200 feet from the watershed streams. The impoundment at the watershed outlet, other impoundments upstream, and wetlands along stream channels will mitigate FAPH related impacts to downstream waters.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Maintenance of Roads (11)

These activities are common throughout much of the FAPH watersheds and do not represent a unique risk. These activities principally occur in the headwater areas of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Form 2. Watershed Priority Score (WPS): A Sensitivity Scoring and Data Collection Form for Waterbodies/Watersheds

Complete a Form 2 for each waterbody listed in Form 1. Transfer the WPS to Form 1.

Waterbody Name:	Bowies Pond (020801050205+)
Watershed Priority Score (WPS):	9

Waterbody/Watershed Impairment Score

Designated Use	Impairment	Cause/Stressor	Score Choose: 3 for not supporting; 2 for partially supporting; 1 for fully supporting; and 0 for not a designated use
a. Aquatic life use			1
b. Fish consumption use	Mercury in fish tissue	Unknown	2
c. Shellfishing use			1
d. Swimming use			1
e. Secondary contact use			1
f. Drinking water use			0
g. Agriculture use			0
h. Cultural/ceremonial use			0
i. State/municipal specific use			0
Total Impairment Score =	6		

Identify Impairments and TMDLs

Waterbody 303(d) Listed Impairements	**TMDL status**		
Transfer the State 303(d) listed pollutants of concern (impairments) from Form 1 and note if the State has developed a TMDL and its effective or potential date.	Choose: 2 for in place; 1 for being developed; and 0 for not in place	**Enter TMDL Date and a E or P for Effective or Potential Date**	
Aquatic Life	0	2020E	
Total TMDL Score =	0		

Waterbody/Watershed Vulnerability Score			
	Response		
	Choose: 1 for Yes and 0 for No		
Are the impervious surfaces above 25% of watershed land area (for either current or projected land use)?	0		
Is the population growth rate of the watershed above 7%?	0		
Does waterbody contain impounded water (e.g., dams and fish barriers)?	1		
Is the receiving water listed as a protected estuary?	0		
Has EPA, DOD individual service, state, water authority, or local group listed restoration goals for the waterbody? If so, list the specific goals.	0		
Biodiversity and habitat loss	0		
Riparian buffer strip loss	0		
Imperviousness/uncontrolled SW runoff	0		
Invasive species	1		
Wetlands	1		
Other:	0		
Has an enforcement official requested the municipality to monitor/sample the watershed or waterbody?	0		
Have water withdrawal/use restrictions been imposed by a regulator for the waterbody?	0		
Have potential impacts to human health been identified by EPA or the state as a significant concern for the waterbody? (e.g., air deposition of a pollutant such as mercury to the waterbody, or pollutants in the water are causing a risk to drinking water)	0		
Is this watershed or waterbody designated as a special water resource under the American Heritage River Program, Great Lakes Program, Scenic Waters Program, or another special program established to protect the water resource?	0		
Are there specific stressors or concerns, such as inability to meet mission due to lack of water or encroachment issue related to an increase in water resource regulatory requirements for the installation? List each stressor.	0		
a. Stressor:			
b. Stressor:			
c. Stressor:			
Additional Watershed Stressors Total:	3		

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Bowies Pond

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Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Bowies Pond

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																	0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0	0			10

Elliots Pond

Table A-3: Elliots Pond Watershed	
Watershed	Mattaponi
HUC Code	YO51
Acres	1,812.10
Percent of FAPH	2.43
Weighted WIVA Priority Ranking	5
Curve Numbers	65
Percent Highly Erodible Soils	26.57
Percent of Watershed with RPA	19.96
Percent of Watershed with Range Cover	7.40
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.70
Percent of Watershed with Impervious Cover	1.88
Percent of Watershed with Forest Cover	79.24
Percent Recent and Near Future Forest Management Activity	24.75
Percent of Watershed With Recent and Near Future Projects	0.00

The Elliots Pond watershed is located along the southwestern edge of FAPH. It is an estimated 1,812.10 acres in size, or 2.43 percent of the greater watershed. Approximately 56 percent of Elliots Pond is covered by forest and 23 percent is covered by mixed cover.

There are two intermittent stream channels at FAPH boundary that enter Maracossic Creek (a supporting water body) 300 feet to the southeast, and approximately 1,700 feet above Elliots Pond, a 72-acre impoundment. Approximately 100-acres of mixed use land along Route 301 drain onto FAPH and the northernmost of the two intermittent streams within the watershed.

WIVA/Vulnerability Assessment

The WIVA/Vulnerability Assessment identified Elliots Pond as a Priority 5 watershed. CNs are average and slopes are low for the region, indicating that high runoff is not a great risk for the watershed. Additionally, the percentage of range cover, area within 1,000 feet of anthropogenic disturbance and percent forest cover are average for the

watershed. The greatest environmental risk factors identified by the WIVA within the Elliots Pond watershed are the amount of impervious surface.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. These activities principally occur in the headwater areas of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Elliots Pond

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			11
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Elliots Pond

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Elliots Pond

Goldenvale Creek

Table A-4: Goldenvale Creek Watershed	
Watershed	Lower Rappahannock
HUC Code	RA51
Acres	8,369.84
Percent of FAPH	11.20
Weighted WIVA Priority Ranking	3
Curve Numbers	64
Percent Highly Erodible Soils	27.72
Percent of Watershed with RPA	14.63
Percent of Watershed with Range Cover	3.30
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.74
Percent of Watershed with Impervious Cover	1.37
Percent of Watershed with Forest Cover	86.97
Percent Recent and Near Future Forest Management Activity	30.15
Percent of Watershed With Recent and Near Future Projects	5.01

The Goldenvale Creek watershed is located in the north-central portion of FAPH. It is an estimated 8,370 acres in size, comprising approximately 11.2 percent of FAPH. This watershed has the highest forest cover, with almost 68 percent of its area in forest cover. Other significant cover types include mixed cover, at 19.2 percent, and herbaceous openland at 4 percent.

Goldenvale Creek enters Goldmans Pond two miles downstream of the FAPH boundary and the Rappahannock River another one mile to the northeast. There are numerous small impoundments the central and lower part of Goldenvale Creek. The 22-acre Travis Lake is in the upper part of the watershed.

WIVA/Vulnerability Assessment

Goldenvale Creek watershed was identified as the third highest priority watershed within FAPH. Although CNs are low due to the significant vegetative cover in the watershed, slopes and erodible soils are quite high across this watershed, indicating natural runoff and erosion are likely greater than most other FAPH watersheds. The percent of

impervious surfaces within the watershed are average. The watershed has a relatively low percentage of range cover compared to some of the other watersheds. However, the large linear range in the lower part of the watershed is relatively close to the Goldenvale Creek. The greatest vulnerability variables for this watershed are the steep slopes and erodible soils which pose challenges to most land disturbing activities.

Department of Defense Protocol Analysis

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Maintenance of Roads (11)

Aside from the large training area in the lower part of the watershed, most anthropogenic disturbance is located in the headwater areas. These activities are common throughout much of the FAPH watersheds and do not represent a unique risk. The use of appropriate permits and plans were identified as the best means of managing these risks.

Form 2. Watershed Priority Score (WPS): A Sensitivity Scoring and Data Collection Form for Waterbodies/Watersheds

Complete a Form 2 for each waterbody listed in Form 1. Transfer the WPS to Form 1.

Waterbody Name:	Goldenvale Creek (020801040203)
Watershed Priority Score (WPS):	9

Waterbody/Watershed Impairment Score

Designated Use	Impairment	Cause/Stressor	Score Choose: 3 for not supporting; 2 for partially supporting; 1 for fully supporting; and 0 for not a designated use
a. Aquatic life use	Dissolved oxygen/pH	Natural conditions	2
b. Fish consumption use			1
c. Shellfishing use			1
d. Swimming use			1
e. Secondary contact use			1
f. Drinking water use			0
g. Agriculture use			0
h. Cultural/ceremonial use			0
i. State/municipal specific use			0
Total Impairment Score =	6		

Identify Impairments and TMDLs

Waterbody 303(d) Listed Impairements	**TMDL status**		
Transfer the State 303(d) listed pollutants of concern (impairments) from Form 1 and note if the State has developed a TMDL and its effective or potential date.	Choose: 2 for in place; 1 for being developed; and 0 for not in place	**Enter TMDL Date and a E or P for Effective or Potential Date**	
Aquatic Life	0	2020E	
Total TMDL Score =	0		

Waterbody/Watershed Vulnerability Score			
	Response		
	Choose: 1 for Yes and 0 for No		
Are the impervious surfaces above 25% of watershed land area (for either current or projected land use)?	0		
Is the population growth rate of the watershed above 7%?	0		
Does waterbody contain impounded water (e.g., dams and fish barriers)?	1		
Is the receiving water listed as a protected estuary?	0		
Has EPA, DOD individual service, state, water authority, or local group listed restoration goals for the waterbody? If so, list the specific goals.	0		
Biodiversity and habitat loss	0		
Riparian buffer strip loss	0		
Imperviousness/uncontrolled SW runoff	0		
Invasive species	1		
Wetlands	1		
Other:	0		
Has an enforcement official requested the municipality to monitor/sample the watershed or waterbody?	0		
Have water withdrawal/use restrictions been imposed by a regulator for the waterbody?	0		
Have potential impacts to human health been identified by EPA or the state as a significant concern for the waterbody? (e.g., air deposition of a pollutant such as mercury to the waterbody, or pollutants in the water are causing a risk to drinking water)	0		
Is this watershed or waterbody designated as a special water resource under the American Heritage River Program, Great Lakes Program, Scenic Waters Program, or another special program established to protect the water resource?	0		
Are there specific stressors or concerns, such as inability to meet mission due to lack of water or encroachment issue related to an increase in water resource regulatory requirements for the installation? List each stressor.	0		
a. Stressor:			
b. Stressor:			
c. Stressor:			
Additional Watershed Stressors Total:	3		

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Goldenvale Creek

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Goldenvale Creek

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Gregg Pond

Table A-5: Gregg Pond Watershed	
Watershed	Mattaponi
HUC Code	YO51
Acres	3,038.57
Percent of FAPH	4.10
Weighted WIVA Priority Ranking	11
Curve Numbers	66
Percent Highly Erodible Soils	22.55
Percent of Watershed with RPA	18.49
Percent of Watershed with Range Cover	4.2
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.39
Percent of Watershed with Impervious Cover	4.20
Percent of Watershed with Forest Cover	69.60
Percent Recent and Near Future Forest Management Activity	16.89
Percent of Watershed With Recent and Near Future Projects	1.69

The Gregg Pond watershed is located on the western border of FAPH. It is an estimated 3,039 acres in size and comprises approximately 4.1 percent of FAPH. Land cover within the watershed consists of forest cover (45 percent), mixed cover (24 percent), and turfgrass (13 percent).

The Gregg Pond watershed is drained by the upper reaches of Maracossic Creek, which enters a large impoundment behind an installation road before leaving the installation and entering Broaddus Pond.

WIVA/Vulnerability Assessment

The Gregg Pond watershed is ranked as a Priority 11 watershed. Although this watershed has below average slopes and erodible soils, the watershed is one of the most developed, with the highest percentage of impervious surfaces.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. The use of appropriate permits and plans were identified as the best means of managing these risks.

Form 2. Watershed Priority Score (WPS): A Sensitivity Scoring and Data Collection Form for Waterbodies/Watersheds

Complete a Form 2 for each waterbody listed in Form 1. Transfer the WPS to Form 1.

Waterbody Name:	Maracossic Creek (0208010504)
Watershed Priority Score (WPS):	8

Waterbody/Watershed Impairment Score

Designated Use	Impairment	Cause/Stressor	Score Choose: 3 for not supporting; 2 for partially supporting; 1 for fully supporting; and 0 for not a designated use
a. Aquatic life use			1
b. Fish consumption use			1
c. Shellfishing use			1
d. Swimming use			1
e. Secondary contact use			1
f. Drinking water use			0
g. Agriculture use			0
h. Cultural/ceremonial use			0
i. State/municipal specific use			0
Total Impairment Score =	5		

Identify Impairments and TMDLs

Waterbody 303(d) Listed Impairements	TMDL status	Enter TMDL Date and a E or P for Effective or Potential Date	
Transfer the State 303(d) listed pollutants of concern (impairments) from Form 1 and note if the State has developed a TMDL and its effective or potential date.	Choose: 2 for in place; 1 for being developed; and 0 for not in place		
Total TMDL Score =	0		

Waterbody/Watershed Vulnerability Score			
	Response		
	Choose: 1 for Yes and 0 for No		
Are the impervious surfaces above 25% of watershed land area (for either current or projected land use)?	0		
Is the population growth rate of the watershed above 7%?	0		
Does waterbody contain impounded water (e.g., dams and fish barriers)?	1		
Is the receiving water listed as a protected estuary?	0		
Has EPA, DOD individual service, state, water authority, or local group listed restoration goals for the waterbody? If so, list the specific goals.	0		
Biodiversity and habitat loss	0		
Riparian buffer strip loss	0		
Imperviousness/uncontrolled SW runoff	0		
Invasive species	1		
Wetlands	1		
Other:	0		
Has an enforcement official requested the municipality to monitor/sample the watershed or waterbody?	0		
Have water withdrawal/use restrictions been imposed by a regulator for the waterbody?	0		
Have potential impacts to human health been identified by EPA or the state as a significant concern for the waterbody? (e.g., air deposition of a pollutant such as mercury to the waterbody, or pollutants in the water are causing a risk to drinking water)	0		
Is this watershed or waterbody designated as a special water resource under the American Heritage River Program, Great Lakes Program, Scenic Waters Program, or another special program established to protect the water resource?	0		
Are there specific stressors or concerns, such as inability to meet mission due to lack of water or encroachment issue related to an increase in water resource regulatory requirements for the installation? List each stressor.	0		
a. Stressor:			
b. Stressor:			
c. Stressor:			
Additional Watershed Stressors Total:	3		

Note: Portions of Maracossic Creek have been determined to be impaired; however, these segments are downstream of FAPH

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Gregg Pond

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			11
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Gregg Pond

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Gregg Pond

Meadow Creek

Table A-6: Meadow Creek Watershed	
Watershed	Mattaponi
HUC Code	YO42
Acres	2,079.24
Percent of FAPH	2.80
Weighted WIVA Priority Ranking	5
Curve Numbers	71
Percent Highly Erodible Soils	2.03
Percent of Watershed with RPA	17.97
Percent of Watershed with Range Cover	0.00
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.22
Percent of Watershed with Impervious Cover	1.64
Percent of Watershed with Forest Cover	71.05
Percent Recent and Near Future Forest Management Activity	32.57
Percent of Watershed With Recent and Near Future Projects	0.73

Meadow Creek is located in the northwest portion of FAPH. At approximately 2,079 acres, this watershed comprises just 2.8 percent of FAPH. Nearly half of the land cover within the watershed is comprised of forest cover, with mixed cover making up the other dominant category (22 percent). There is a small impoundment at the watershed outlet along Route 2.

WIVA/Vulnerability Assessment

Meadow Creek watershed is ranked as a Priority 5 watershed. Although this watershed has low slopes and erodible soils, this low ranking is somewhat anomalous given the low percent forest cover and relatively high percent impervious cover, and CN. The low ranking is partially attributable to the low percent of anthropogenic disturbance proximal to the watershed streams. The Meadow Creek watershed also has a unique triangular shape, which results in short stream segments and a high percent of the watershed area being close to the watershed outlet. In addition, the area of FAPH surveyed wetlands are substantially greater than the area of NWI wetlands.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Maintenance of Roads (11)

Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. These activities principally occur in the headwater areas of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
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Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																	0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0	0			10

Mill Creek

Table A-7 Mill Creek Watershed	
Watershed	Lower Rappahannock
HUC Code	RA50
Acres	21,338.2
Percent of FAPH	28.59
Weighted WIVA Priority Ranking	4
Curve Numbers	63
Percent Highly Erodible Soil	63.46
Percent of Watershed with RPA	18.36
Percent of Watershed with Range Cover	3.30
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.58
Percent of Watershed with Impervious Cover	1.70
Percent of Watershed with Forest Cover	80.18
Percent Recent and Near Future Forest Management Activity	10.70
Percent of Watershed With Recent and Near Future Projects	9.50

Mill Creek watershed is the largest watershed in FAPH, with an estimated 21,338.2 acres and comprising 28.59 percent of FAPH. It is located in the center of FAPH, stretching to the northeastern border. Land cover within the watershed is comprised of forest cover (63 percent) and mixed cover (23 percent). Mill Creek discharges to a large wetland system along the boundary of the installation, before flowing approximately two miles to the north to the Rappahannock River.

WIVA/Vulnerability Assessment

Mill Creek watershed is the fourth most vulnerable watershed within FAPH. Positive attributes within the watershed include relatively high forest cover, and a low CN. Negative attributes include a relatively high percentage of range cover, steep slopes, highly erodible soils, and anthropogenic disturbance, Additionally there are comparatively few wetlands, given the steep slopes. The Wilcox STP is also located in the Mill Creek watershed. Because this watershed represents almost a third of the overall FAPH land area, these positive and negative attributes represent more notable management issues than do conditions in some of the smaller watersheds.

The Mill Creek watershed includes the installation's Upper Zion Dudded Impact Area. The area has the potential for chemical contamination of the watershed and its aquifer through leeching of unexploded ordinance and distribution of combusted chemical constituents that result from live-fire training. To help manage risk of potential contamination, the installation should conduct broad-spectrum chemical analyses of surface and ground water quality every five years in the Mill Creek watershed.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Wilcox Wastewater Treatment Plant (17)
- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Airfield (11)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

The treatment plant and airfield represent special stressors to the Mill Creek watershed. Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. The use of appropriate permits and plans were identified as the best means of managing these risks.

Form 2. Watershed Priority Score (WPS): A Sensitivity Scoring and Data Collection Form for Waterbodies/Watersheds

Complete a Form 2 for each waterbody listed in Form 1. Transfer the WPS to Form 1.

Waterbody Name:	Mill Creek (020801040202)
Watershed Priority Score (WPS):	9

Waterbody/Watershed Impairment Score

Designated Use	Impairment	Cause/Stressor	Score Choose: 3 for not supporting; 2 for partially supporting; 1 for fully supporting; and 0 for not a designated use
a. Aquatic life use	pH, macroinvertebrates	Natural conditions	2
b. Fish consumption use			1
c. Shellfishing use			1
d. Swimming use			1
e. Secondary contact use			1
f. Drinking water use			0
g. Agriculture use			0
h. Cultural/ceremonial use			0
i. State/municipal specific use			0
Total Impairment Score =	6		

Identify Impairments and TMDLs

Waterbody 303(d) Listed Impairements	TMDL status		
Transfer the State 303(d) listed pollutants of concern (impairments) from Form 1 and note if the State has developed a TMDL and its effective or potential date.	Choose: 2 for in place; 1 for being developed; and 0 for not in place	**Enter TMDL Date and a E or P for Effective or Potential Date**	
Aquatic Life	0	2020E	
Total TMDL Score =	0		

Waterbody/Watershed Vulnerability Score			
	Response		
	Choose: 1 for Yes and 0 for No		
Are the impervious surfaces above 25% of watershed land area (for either current or projected land use)?	0		
Is the population growth rate of the watershed above 7%?	0		
Does waterbody contain impounded water (e.g., dams and fish barriers)?	1		
Is the receiving water listed as a protected estuary?	0		
Has EPA, DOD individual service, state, water authority, or local group listed restoration goals for the waterbody? If so, list the specific goals.	0		
Biodiversity and habitat loss	0		
Riparian buffer strip loss	0		
Imperviousness/uncontrolled SW runoff	0		
Invasive species	1		
Wetlands	1		
Other:	0		
Has an enforcement official requested the municipality to monitor/sample the watershed or waterbody?	0		
Have water withdrawal/use restrictions been imposed by a regulator for the waterbody?	0		
Have potential impacts to human health been identified by EPA or the state as a significant concern for the waterbody? (e.g., air deposition of a pollutant such as mercury to the waterbody, or pollutants in the water are causing a risk to drinking water)	0		
Is this watershed or waterbody designated as a special water resource under the American Heritage River Program, Great Lakes Program, Scenic Waters Program, or another special program established to protect the water resource?	0		
Are there specific stressors or concerns, such as inability to meet mission due to lack of water or encroachment issue related to an increase in water resource regulatory requirements for the installation? List each stressor.	0		
a. Stressor:			
b. Stressor:			
c. Stressor:			
Additional Watershed Stressors Total:	3		

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	1	1	0	0	0	1	0	0	1		1	0	0	0	1	0	0	0	0	1	3	1	0	1			12
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	1	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	1	3	1	0	1			14
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	2	0	0	0	2	1	2	0	0	0	1	0	1	1	0	0	0	0		1	0	0	0	0	1	2	3	0	0			17
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system								0	0	0		0																0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Mill Creek

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GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																																
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Mount Creek

Table A-8: Mount Creek Watershed	
Watershed	Lower Rappahannock
HUC Code	RA49
Acres	7,508.83
Percent of FAPH	10.00
Weighted WIVA Priority Ranking	5
Curve Numbers	64
Percent Highly Erodible Soil	56.74
Percent of Watershed with RPA	18.14
Percent of Watershed with Range Cover	0.00
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.17
Percent of Watershed with Impervious Cover	1.20
Percent of Watershed with Forest Cover	85.57
Percent Recent and Near Future Forest Management Activity	26.46
Percent of Watershed With Recent and Near Future Projects	9.71

Mount Creek watershed is located in the northern portion of FAPH, with Ware Creek watershed to the north and Goldenvale Creek watershed to the south. The land area is 7,508.83 acres, comprising approximately ten percent of the FAPH land area. Land cover within the watershed is dominated by forest (64 percent) and mixed cover (21 percent).

WIVA/Vulnerability Assessment

The Mount Creek watershed is a Priority 5 watershed. Because of its isolated location in the northern end of FAPH, there is little anthropogenic development, impervious surface, or range cover. Forest cover is high and CNs are low. Negative attributes identified in the WIVA include a small area of NWI wetlands. The greatest environmental concerns within the Mount Creek watershed are steep slopes and large areas of highly erodible soils.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. These activities principally occur in the headwater areas of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Form 2. Watershed Priority Score (WPS): A Sensitivity Scoring and Data Collection Form for Waterbodies/Watersheds

Complete a Form 2 for each waterbody listed in Form 1. Transfer the WPS to Form 1.

Waterbody Name:	Mount Creek (020801040201)
Watershed Priority Score (WPS):	9

Waterbody/Watershed Impairment Score

Designated Use	Impairment	Cause/Stressor	Score Choose: 3 for not supporting; 2 for partially supporting; 1 for fully supporting; and 0 for not a designated use
a. Aquatic life use	pH	Natural conditions	2
b. Fish consumption use			1
c. Shellfishing use			1
d. Swimming use			1
e. Secondary contact use			1
f. Drinking water use			0
g. Agriculture use			0
h. Cultural/ceremonial use			0
i. State/municipal specific use			0
Total Impairment Score =	6		

Identify Impairments and TMDLs

Waterbody 303(d) Listed Impairements	**TMDL status**		
Transfer the State 303(d) listed pollutants of concern (impairments) from Form 1 and note if the State has developed a TMDL and its effective or potential date.	Choose: 2 for in place; 1 for being developed; and 0 for not in place	**Enter TMDL Date and a E or P for Effective or Potential Date**	
Aquatic Life	0	2020E	
Total TMDL Score =	0		

Waterbody/Watershed Vulnerability Score			
	Response		
	Choose: 1 for Yes and 0 for No		
Are the impervious surfaces above 25% of watershed land area (for either current or projected land use)?	0		
Is the population growth rate of the watershed above 7%?	0		
Does waterbody contain impounded water (e.g., dams and fish barriers)?	1		
Is the receiving water listed as a protected estuary?	0		
Has EPA, DOD individual service, state, water authority, or local group listed restoration goals for the waterbody? If so, list the specific goals.	0		
Biodiversity and habitat loss	0		
Riparian buffer strip loss	0		
Imperviousness/uncontrolled SW runoff	0		
Invasive species	1		
Wetlands	1		
Other:	0		
Has an enforcement official requested the municipality to monitor/sample the watershed or waterbody?	0		
Have water withdrawal/use restrictions been imposed by a regulator for the waterbody?	0		
Have potential impacts to human health been identified by EPA or the state as a significant concern for the waterbody? (e.g., air deposition of a pollutant such as mercury to the waterbody, or pollutants in the water are causing a risk to drinking water)	0		
Is this watershed or waterbody designated as a special water resource under the American Heritage River Program, Great Lakes Program, Scenic Waters Program, or another special program established to protect the water resource?	0		
Are there specific stressors or concerns, such as inability to meet mission due to lack of water or encroachment issue related to an increase in water resource regulatory requirements for the installation? List each stressor.	0		
a. Stressor:			
b. Stressor:			
c. Stressor:			
Additional Watershed Stressors Total:	3		

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		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

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		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
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Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																																
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Portobago Creek

Table A-9: Portobago Creek Watershed	
Watershed	Lower Rappahannock
HUC Code	RA52
Acres	6,198.63
Percent of FAPH	8.30
Weighted WIVA Priority Ranking	2
Curve Numbers	63
Percent Highly Erodible Soils	68.14
Percent of Watershed with RPA	18.28
Percent of Watershed with Range Cover	13.20
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	2.86
Percent of Watershed with Impervious Cover	1.26
Percent of Watershed with Forest Cover	69.27
Percent Recent and Near Future Forest Management Activity	6.76
Percent of Watershed With Recent and Near Future Projects	47.20

Portobago Creek watershed is located on the southeastern border of FAPH. It is an estimated 6,198.63 acres in size, or approximately 8.3 percent of FAPH. Land cover within the watershed consists of forest (62 percent) and managed turfgrass (23 percent).

Portobago Creek discharges to the Rappahannock River. The lower end of this watershed occurs outside of FAPH. The FAPH installation boundary follows this creek for approximately two miles. Along these two miles there are approximately 550 acres that also drain to the creek.

WIVA/Vulnerability Assessment

The Portobago Creek watershed is the second most vulnerable watershed in FAPH. Positive attributes identified by the analysis include a low CN and average slopes. Negative attributes include a high percentage (68 percent) of soils classified as highly erodible, range cover, and anthropogenic disturbance proximal to streams.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Maintenance of Roads (11)

These activities are common throughout much of the FAPH watersheds and do not represent a unique risk. The use of appropriate permits and plans were identified as the best means of managing these risks.

Form 2. Watershed Priority Score (WPS): A Sensitivity Scoring and Data Collection Form for Waterbodies/Watersheds

Complete a Form 2 for each waterbody listed in Form 1. Transfer the WPS to Form 1.

Waterbody Name:	Portobago Creek (020801040301)
Watershed Priority Score (WPS):	11

Waterbody/Watershed Impairment Score

Designated Use	Impairment	Cause/Stressor	Score Choose: 3 for not supporting; 2 for partially supporting; 1 for fully supporting; and 0 for not a designated use
a. Aquatic life use	Dissolved Oxygen	Unknown	2
b. Fish consumption use			1
c. Shellfishing use			1
d. Swimming use	E. Coli	Unknown	2
e. Secondary contact use	E. Coli	Unknown	2
f. Drinking water use			0
g. Agriculture use			0
h. Cultural/ceremonial use			0
i. State/municipal specific use			0
Total Impairment Score =	8		

Identify Impairments and TMDLs

Waterbody 303(d) Listed Impairements Transfer the State 303(d) listed pollutants of concern (impairments) from Form 1 and note if the State has developed a TMDL and its effective or potential date.	**TMDL status** Choose: 2 for in place; 1 for being developed; and 0 for not in place	**Enter TMDL Date and a E or P for Effective or Potential Date**	
Aquatic Life	0	2020E	
E. Coli	0	2020E	
Total TMDL Score =	0		

Waterbody/Watershed Vulnerability Score			
	Response		
	Choose: 1 for Yes and 0 for No		
Are the impervious surfaces above 25% of watershed land area (for either current or projected land use)?	0		
Is the population growth rate of the watershed above 7%?	0		
Does waterbody contain impounded water (e.g., dams and fish barriers)?	1		
Is the receiving water listed as a protected estuary?	0		
Has EPA, DOD individual service, state, water authority, or local group listed restoration goals for the waterbody? If so, list the specific goals.	0		
Biodiversity and habitat loss	0		
Riparian buffer strip loss	0		
Imperviousness/uncontrolled SW runoff	0		
Invasive species	1		
Wetlands	1		
Other:	0		
Has an enforcement official requested the municipality to monitor/sample the watershed or waterbody?	0		
Have water withdrawal/use restrictions been imposed by a regulator for the waterbody?	0		
Have potential impacts to human health been identified by EPA or the state as a significant concern for the waterbody? (e.g., air deposition of a pollutant such as mercury to the waterbody, or pollutants in the water are causing a risk to drinking water)	0		
Is this watershed or waterbody designated as a special water resource under the American Heritage River Program, Great Lakes Program, Scenic Waters Program, or another special program established to protect the water resource?	0		
Are there specific stressors or concerns, such as inability to meet mission due to lack of water or encroachment issue related to an increase in water resource regulatory requirements for the installation? List each stressor.	0		
a. Stressor:			
b. Stressor:			
c. Stressor:			
Additional Watershed Stressors Total:	3		

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

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Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			11
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																																
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Roys Run

Table A-10: Roys Run Watershed	
Watershed	Lower Rappahannock
HUC Code	RA51
Acres	1,257.41
Percent of FAPH	1.68
Weighted WIVA Priority Ranking	13
Curve Numbers	68
Percent Highly Erodible Soils	35.26
Percent of Watershed with RPA	29.68
Percent of Watershed with Range Cover	0.00
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.47
Percent of Watershed with Impervious Cover	1.54
Percent of Watershed with Forest Cover	83.55
Percent Recent and Near Future Forest Management Activity	12.49
Percent of Watershed With Recent and Near Future Projects	0.00

Roys Run is a small watershed located in the northeast area of FAPH. It is an estimated 1,257 acres, or 1.68 percent of FAPH. Land cover within the watershed is divided between forest cover (48 percent) and mixed cover (35 percent).

WIVA/Vulnerability Assessment

The Roys Run watershed is the least vulnerable watershed in FAPH. There most significant threat to this watershed is the Cooke Camp and Cooke STP, although it is our understanding that these facilities are not frequently used. There are no ranges in the watershed. Roys Run also has large areas of NWI wetlands (13.6 percent of the land area).

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Cooke STP (17)
- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. These activities principally occur in the headwater areas of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	2	0	0	0	2	1	2	0	0	0	1	0	1	1	0	0	0	0		1	0	0	0	0	1	2	3	0	0			17
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	1	1	2	0	0			10
Yes	Large Arms Impact Areas	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			11
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Smoots Run

Table A-11: Smoots Run Watershed	
Watershed	Mattaponi
HUC Code	YO51
Acres	5,029.55
Weighted WIVA Priority Ranking	10
Percent of FAPH	6.70
Curve Numbers	64
Percent Highly Erodible Soil	45.42
Percent of Watershed with RPA	20.85
Percent of Watershed with Range Cover	2.7
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.43
Percent of Watershed with Impervious Cover	0.97
Percent of Watershed with Forest Cover	76.31
Percent Recent and Near Future Forest Management Activity	11.84
Percent of Watershed With Recent and Near Future Projects	17.66

Smoots Run watershed is located at the southern end of FAPH and has an estimated area of 5,029.55 acres, approximately 6.7 percent of the FAPH land area. Smoots Run watershed has less forest cover than any other watershed, at just 39.76 percent. Other land cover includes mixed cover (36.55 percent) and herbaceous openland (11.55 percent).

WIVA/Vulnerability Assessment

The Smoots Run watershed is ranked as Priority 10 watershed. Slopes and the CN are low and percent highly erodible soils are average, so major erosion is not a great concern. Limited amounts of the watershed contain anthropogenic development within 200 feet of streams. In addition, less than one percent of the land area is covered by impervious surface. A medium sized impoundment, Smoots Lake, is located on FAPH at the watershed outlet. The impoundment will mitigate FAPH related impacts to downstream waters. Surface water from the impoundment enters Maracossic Creek approximately 100 feet to the southwest.

The Smoots Run watershed includes the installation's Upper Zion Dudded Impact Area. The area has the potential for chemical contamination of the watershed and its aquifer through leeching of unexploded ordinance and distribution of combusted chemical constituents that result from live-fire training. To help manage risk of potential contamination, the installation should conduct broad-spectrum chemical analyses of surface and ground water quality every five years in the Smoots Run watershed.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. These activities principally occur in the headwater areas of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Smoots Pond

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			11
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																																
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools								0	0	0		0																0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Smoots Pond

Ware Creek

Table A-12: Ware Creek Watershed	
Watershed	Lower Rappahannock
HUC Code	RA49
Acres	3,856.66
Percent of FAPH	5.17
Weighted WIVA Priority Ranking	9
Curve Numbers	64
Percent Highly Erodible Soils	52.54
Percent of Watershed with RPA	16.84
Percent of Watershed with Range Cover	0.00
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	0.11
Percent of Watershed with Impervious Cover	0.62
Percent of Watershed with Forest Cover	90.06
Percent Recent and Near Future Forest Management Activity	27.48
Percent of Watershed With Recent and Near Future Projects	18.35

Ware Creek watershed is located at the northwestern tip of FAPH, with an estimated total land area of 3,856.66 acres. It represents approximately 5.17 percent of the FAPH land area. An estimated 63.25 percent of the watershed is covered by forest, and 26.8 percent is covered by mixed cover. Approximately 185 acres of land outside of FAPH drain to Ware Creek.

WIVA/Vulnerability Assessment

The Ware Creek watershed received a Priority 9 ranking. Due to its location at the northern tip of FAPH, there is very little anthropogenic disturbance or impervious surface. Slopes are gentle and the CN is average, although more than half of the soils are classified as highly erodible. There are relatively few NWI wetlands, making up just 3.4 percent of the land area, although FAPH wetland surveys indicate considerably more wetland area.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

Large arms impact areas are isolated within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. These activities principally occur in the headwater areas of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Form 2. Watershed Priority Score (WPS): A Sensitivity Scoring and Data Collection Form for Waterbodies/Watersheds

Complete a Form 2 for each waterbody listed in Form 1. Transfer the WPS to Form 1.

Waterbody Name:	Ware Creek (020801040201+)
Watershed Priority Score (WPS):	9

Waterbody/Watershed Impairment Score

Designated Use	Impairment	Cause/Stressor	Score Choose: 3 for not supporting; 2 for partially supporting; 1 for fully supporting; and 0 for not a designated use
a. Aquatic life use	Ph	Unknown	2
b. Fish consumption use			1
c. Shellfishing use			1
d. Swimming use			1
e. Secondary contact use			1
f. Drinking water use			0
g. Agriculture use			0
h. Cultural/ceremonial use			0
i. State/municipal specific use			0
Total Impairment Score =	6		

Identify Impairments and TMDLs

Waterbody 303(d) Listed Impairements	**TMDL status**		
Transfer the State 303(d) listed pollutants of concern (impairments) from Form 1 and note if the State has developed a TMDL and its effective or potential date.	Choose: 2 for in place; 1 for being developed; and 0 for not in place	**Enter TMDL Date and a E or P for Effective or Potential Date**	
Aquatic Life	0	2020E	
Total TMDL Score =	0		

Waterbody/Watershed Vulnerability Score			
	Response		
	Choose: 1 for Yes and 0 for No		
Are the impervious surfaces above 25% of watershed land area (for either current or projected land use)?	0		
Is the population growth rate of the watershed above 7%?	0		
Does waterbody contain impounded water (e.g., dams and fish barriers)?	1		
Is the receiving water listed as a protected estuary?	0		
Has EPA, DOD individual service, state, water authority, or local group listed restoration goals for the waterbody? If so, list the specific goals.	0		
Biodiversity and habitat loss	0		
Riparian buffer strip loss	0		
Imperviousness/uncontrolled SW runoff	0		
Invasive species	1		
Wetlands	1		
Other:	0		
Has an enforcement official requested the municipality to monitor/sample the watershed or waterbody?	0		
Have water withdrawal/use restrictions been imposed by a regulator for the waterbody?	0		
Have potential impacts to human health been identified by EPA or the state as a significant concern for the waterbody? (e.g., air deposition of a pollutant such as mercury to the waterbody, or pollutants in the water are causing a risk to drinking water)	0		
Is this watershed or waterbody designated as a special water resource under the American Heritage River Program, Great Lakes Program, Scenic Waters Program, or another special program established to protect the water resource?	0		
Are there specific stressors or concerns, such as inability to meet mission due to lack of water or encroachment issue related to an increase in water resource regulatory requirements for the installation? List each stressor.	0		
a. Stressor:			
b. Stressor:			
c. Stressor:			
Additional Watershed Stressors Total:	3		

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		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	Dining facilities	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Ware Creek

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Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Ware Creek

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff that contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL) for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protecion zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Whites Lake

Table A-13: Whites Lake Watershed	
Watershed	Mattaponi
HUC Code	YO52
Acres	6,824.19
Percent of FAPH	9.14
Weighted WIVA Priority Ranking	1
Curve Numbers	64
Percent Highly Erodible Soils	63.11
Percent of Watershed with RPA	17.88
Percent of Watershed with Range Cover	25.70
Percent of Watershed With Anthropogenic Disturbance Within 100 feet of RPA	7.02
Percent of Watershed with Impervious Cover	1.22
Percent of Watershed with Forest Cover	80.12
Percent Recent and Near Future Forest Management Activity	15.20
Percent of Watershed With Recent and Near Future Projects	14.02

The Whites Lake watershed is located on the southeastern border of FAPH. It is 6,824 acres in size, making up approximately 9.14 percent of the FAPH land area. The watershed has relatively low forest cover, at 48 percent. Other dominant land covers include mixed cover (31.93 percent) and herbaceous openland (10.3 percent).

The 72-acre Whites Lake occurs at the watershed outlet. The impoundment will mitigate FAPH related impacts to downstream waters.

WIVA/Vulnerability Assessment

The WIVA identified Whites Lake as the most at risk watershed within FAPH. Although the CN is low and slopes are average, a high percentage (63 percent) of soils are classified as highly erodible. Additionally, a higher percentage of the land area within Whites Lake is near anthropogenic disturbance than in any other watershed. Ranges cover 26 percent of the watershed area.

The Whites Lake watershed includes the installation's Upper Zion Dudded Impact Area. The area has the potential for chemical contamination of the watershed and its aquifer through leeching of unexploded ordinance and distribution of combusted chemical constituents that result from live-fire training. To help manage risk of potential contamination, the installation should conduct broad-spectrum chemical analyses of surface and ground water quality every five years in the Whites Lake watershed.

Department of Defense Protocol

The highest ranking activities identified by the DoD Protocol are listed below, along with their TABS.

- Filling and grading (14)
- Gasoline, diesel, JP8 fuel points & POL training berms (14)
- Construction sites (11)
- Large arms impact areas (11)
- Maintenance of Roads (11)

Large arms impact areas are located within the southern watersheds within the installation. The other activities are common throughout much of the FAPH watersheds and do not represent a unique risk. These activities principally occur in the headwater areas of the watershed. The use of appropriate permits and plans were identified as the best means of managing these risks.

Form 2. Watershed Priority Score (WPS): A Sensitivity Scoring and Data Collection Form for Waterbodies/Watersheds

Complete a Form 2 for each waterbody listed in Form 1. Transfer the WPS to Form 1.

Waterbody Name:	Beverly Run (020801050402)
Watershed Priority Score (WPS):	9

Waterbody/Watershed Impairment Score

Designated Use	Impairment	Cause/Stressor	Score Choose: 3 for not supporting; 2 for partially supporting; 1 for fully supporting; and 0 for not a designated use
a. Aquatic life use	pH	Excursions below the lower limit of the pH criterion range	2
b. Fish consumption use			1
c. Shellfishing use			1
d. Swimming use			1
e. Secondary contact use			1
f. Drinking water use			0
g. Agriculture use			0
h. Cultural/ceremonial use			0
i. State/municipal specific use			0
Total Impairment Score =	6		

Identify Impairments and TMDLs

Waterbody 303(d) Listed Impairements	**TMDL status**		
Transfer the State 303(d) listed pollutants of concern (impairments) from Form 1 and note if the State has developed a TMDL and its effective or potential date.	Choose: 2 for in place; 1 for being developed; and 0 for not in place	**Enter TMDL Date and a E or P for Effective or Potential Date**	
Aquatic Life	0	2020E	
Total TMDL Score =	0		

Waterbody/Watershed Vulnerability Score			
	Response		
	Choose: 1 for Yes and 0 for No		
Are the impervious surfaces above 25% of watershed land area (for either current or projected land use)?	0		
Is the population growth rate of the watershed above 7%?	0		
Does waterbody contain impounded water (e.g., dams and fish barriers)?	1		
Is the receiving water listed as a protected estuary?	0		
Has EPA, DOD individual service, state, water authority, or local group listed restoration goals for the waterbody? If so, list the specific goals.	0		
Biodiversity and habitat loss	0		
Riparian buffer strip loss	0		
Imperviousness/uncontrolled SW runoff	0		
Invasive species	1		
Wetlands	1		
Other:	0		
Has an enforcement official requested the municipality to monitor/sample the watershed or waterbody?	0		
Have water withdrawal/use restrictions been imposed by a regulator for the waterbody?	0		
Have potential impacts to human health been identified by EPA or the state as a significant concern for the waterbody? (e.g., air deposition of a pollutant such as mercury to the waterbody, or pollutants in the water are causing a risk to drinking water)	0		
Is this watershed or waterbody designated as a special water resource under the American Heritage River Program, Great Lakes Program, Scenic Waters Program, or another special program established to protect the water resource?	0		
Are there specific stressors or concerns, such as inability to meet mission due to lack of water or encroachment issue related to an increase in water resource regulatory requirements for the installation? List each stressor.	0		
a. Stressor:			
b. Stressor:			
c. Stressor:			
Additional Watershed Stressors Total:	3		

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Above ground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0			5
Yes	All buildings	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Agricultural outleasing	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1
Yes	Wildlife management fields (food plots)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes	Airfield (Asphalt) UAV	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (gravel pack)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Airfield (grass)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Ammunition Supply Points (ASP)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0			7
Yes / 1237	Battery Management and Storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes (associate AST shape file & propane tanks to buildings layer)	Boilers/furnances (permitted-CAA)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0			7
Yes	Bridge construction and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes	Bulk Fueling Stations and Transfer	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0			9
Manual Input (Sites Varies)	Construction sites	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0			11
Yes	Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Scutter to complete	Dams or other in stream flow regulations/ modification devices	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes /asphalt rds	De-icing Material Application	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes/Wilcox/other	De-icing Material Application	0	0	0	0	0	2	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			6
Yes/Manual	Domestic Wastewater Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes/Manual	Domestic wastewater lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Drinking water distribution system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / wells	Drinking water treatment (wells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes?	Electrical Substations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Emergency Power (backup generators)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Kris	Borrow Pits/Stockpiles	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0			8
Yes/gravel & unimproved roads	Filling and Grading	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	1	1	2	0	0			14
Yes/multiple types	1 Fire Breaks	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3
Yes/man	1 Fire Fighting Training (facility)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			1

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes (closed landfills)	Ground water monitoring wells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes, Building layer, (Entemology Bldg)	pesticide equipment wash facilities (100% recycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / 90 day storage	Hazardous waste storage facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
EP4/ VAANG/ARC/NV-DZ/71-A/\	Heavy equipment storage	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes / Central Vehicle	Heavy vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
airfield #1 & Wilcox / Range-25	Helicopter Pad Operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			7
Yes (building layer) / Family Housing	Housing Areas	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Cooke VPA only	Land application of sanitary wastewater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Large Arms Impact Areas	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			11
Yes / Roads	Maintenance of roads (LRAM and Roads and Grounds).	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	0			11
manual/housing/HQ/Command	Major landscaping activities	0	0	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0			6
Yes	Manmade Ponds, Reservoirs	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0			4
Yes (TMP only)	Motor pools and vehicle maintenance centers	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
Yes / archer	Outdoor recreation centers (rentals), RV parks, campgrounds	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0			7
Yes	gasoline, diesel, JP8 fuel points & POL training berms	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	1	3	1	0	0			14
Yes	Open detonation	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	3	1	0	0			10
Yes / land-cover (all parking lots, asphalt and gravel)	Parking lots (greater than 1/2 acre)	0	0	0	0	0	2	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / HQ	Personal vehicle washing operations	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes / Scrap Yard	Recycling Collection and Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / Sergio	Solid waste management unit - response complete or no further action required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / EP4 (building layer)	Salt/sand storage	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5

Part 1: Describe the Activity, Its		Part 2. Quantify the Activity's Impact and Determine the Total Activity Burden Score																															
		Surface Water Impacts															Groundwater Impacts				Air Impacts			TE&S	Cultural Resources	Health Safety	Compliance Burden			Mission Sustainability Impact	Totals		
GIS Feature (Y/N)	Category of Typical Activity	Does the activity result in a direct point source discharge to surface waters that is regulated under the CWA?	Is the activity out of compliance with CWA regulations because it does not have an individual or installation permit?	If the activity is permitted, is it currently out of compliance with the permit standards?	Does the activity have a previous recurring non-compliance?	Does the activity have a discharge from "regulated" point source stormwater runoff tha contains sediment or other pollutants?	Does the activity have runoff from non-point sources that contain sediment or other pollutants?	Are the pollutants discharged from this activity listed on the state/EPA 303d list (TMDL for this waterbody?	Does the activity drain to a waterbody that is a source of drinking water?	Is the activity located in a State Identified Source Water Protection Zone?	Does the activity adversely affect flow of a waterbody with restrictions on water withdrawal or discharge volumes?	Are the streams or rivers near the activity exhibit visible signs of bank erosion, scouring, or unstable stream banks?	Does the area around the activity exhibit uncontrolled flooding during rain events?	Does the area around the activity contain streams or rivers without adequate riparian buffer?	Does the area around the activity contain steep slopes or other areas that exhibit visible signs of erosion?	Is the activity affected by upstream properties or activities that may affect water quality or cause on site flooding or stream scouring?	Does the activity inject or have infiltration of a pollutant to ground water?	Discharge pollutants that violate maximum contaminate levels or groundwater permit?	Does the activity drain to ground waters that are a source of drinking water (aquifer or well)?	Is the activity within 300 feet of a drinking water well or within a wellhead protection zone?	Does the activity have non-permitted discharges to air that are also TMDL regulated pollutants?	Clean Air Act permitted discharge of TMDL pollutant?	Does the activity have a permitted discharge to air that is also considered a TMDL regulated pollutant? If so, is this air discharge in compliance with the CAA permit?	Does the activity disturb sensitive/critical habitat or endangered species habitat?	Does the activity adversely affect cultural resources or historic property?	Does the activity discharge pollutant(s) that pose a risk to worker/public health and/or safety?	Will a new mission operation cause the activity to have a new pollutant discharge to water resources that will increase compliance requirements or liability?	Does the activity require an environmental plan? If yes, has the plan been implemented? If so, has the plan been unsuccessful?	Is the activity currently out of compliance with other environmental laws or regulations?	Is this activity related to an encroachment issue?	Watershed Priority Score (WPS)	Activity Impact Score (AIS)	Total Activity Burden Score (TABS)
Yes	Septic systems/onsite treatment systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Small arms ranges (active)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	1	0	0			7
Yes/Ranges/Facilities/Ag outlease/wildlife fields	Application of fertilizers, pesticides and herbicides	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0			8
Yes (only 1 @ HQ)	Swimming pools	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes / manual	Stocking of ponds and lakes for fishing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			1
Yes/hq/px/family housing	Street cleaning operations (asphalt only)	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
No (EEE to create GIS bmp shapefile)	Stormwater retention and conveyances (maintenance, retrofitting and construction)	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0			6
Yes/working file	1 Prescribed burning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes/land-cover	1 Timber harvesting, skid trails, logging decks, temporary roads, and forest management areas.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0			4
Yes	Underground storage tanks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0			5
Yes	Utility excavation and repair	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			5
Yes/CVW	Vehicle washing operations	0	0	0	0	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			8
TMP?	Vehicle storage areas	0	0		0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0			7
Yes (part-n-parcel to WWTP permit)	Wastewater collection systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Yes	Flood plains	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0			9
Yes (TA)	Dismounted training	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0			7
Yes (TA)	Mounted training	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	2	1	0	0			10

Appendix B: Energy Independence Security Act of 2007, Section 438

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Appendix C: Army Chesapeake Bay Strategy

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Appendix D: Army Chesapeake Bay Action Plan

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Appendix E: Department of Defense Chesapeake Bay Strategic Action Plan

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APPENDIX I – FORT A.P. HILL
INTEGRATED PEST MANAGEMENT PLAN

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1. BACKGROUND

a. Purpose. This plan describes a comprehensive Integrated Pest Management (IPM) program for Fort A.P. Hill. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. Federal Agencies are mandated by public Law (Section 136 r-1 of Reference M.(1) (a)) to use IPM. This plan is a guide to reduce reliance on pesticides and to enhance environmental protection; it reflects current DOD/Army policies, procedures and standards and incorporates the requirements of the Environmental Protection Agency (EPA) and the Commonwealth of Virginia.

b. Authority: Army installations conducting either in-house or contractual pest management operations are required to prepare a written installation pest management plan that is to be reviewed and updated annually (Army Regulation 200-1). The Installation pest management plan is to be based on the Integrated Pest Management (IPM) philosophy. The IPM philosophy of pest control shall be used for all pest control activities conducted at the installation. This IPM Plan was prepared in accordance with the following regulations:

(1) Section 136 et seq. of title 7, United States Code, "Federal insecticide, Fungicide and Rodenticide Act (FIFRA) As amended.

(2) DoD Instruction 4150.7, DoD Pest Management Program, 29 May 2008 (see appendix B, this IPMP).

(3) AR 200-1, Pest Management, 13 Dec.2007

c. Program Objective: This plan provides guidance for operating and maintaining an effective pest management program. Principles of integrated pest management are stressed in the plan. Integrated pest management (IPM) consists of the judicious use of both chemical and nonchemical control techniques to achieve effective pest management with minimal environmental contamination. Adherence to the plan will ensure effective, economical and environmentally acceptable pest management and will maintain compliance with pertinent laws and regulations.

2. RESPONSIBILITIES

a. <u>Commander.</u>

(1) Designate a Pest Management Coordinator for all pest management activities.

(2) Approve and support the pest management plan.

(3) Ensure that installation personnel performing pest control receive adequate training, and achieve pest management certification as required.

(4) Ensure that all pest management operations are conducted safely and have minimal impact on the environment.

b. Director of Public Works.

(1) Determine the pest management requirements for the installation.

(2) Initiate requests for aerial application of pesticides when necessary.

(3) Request and monitor contract pest management operations.

(4) Obtain and maintain adequate supplies of pesticides and pesticide dispersal equipment, and ensure that equipment is properly maintained.

(5) Maintain adequate records of pest management operations.

c. U.S. Army Medical Department Activity MXCO-PM Fort Lee.

(1) Preventive Medicine Service.

(a) Conduct surveillance for pests, which could adversely affect the health and welfare of the installation.

(b) Coordinate with local health officials to determine the prevalence of disease vectors and other public health pests in the area surrounding the installation.

(c) Monitor pesticide sales at the Self-Service-Supply-Center and the Post Exchange.

(d) Evaluate the health aspects of the pest management program.

(2) Veterinary Services. Conduct surveillance for pests which destroy food stored in installation facilities.

d. Pest Management Coordinator.

(1) Prepare, monitor, and update the installation pest management plan.

(2) Coordinate with activities conducting pest surveillance or controlling pests to ensure all applicable information is recorded and reported as required by this plan.

(3) Function as a point of contact between those individuals who store and apply pesticides (e.g., public works, Post Exchange, SSSC, pest control contractors, and tenant activities) and activities or individuals who document or deal with pesticide use in their programs (e.g., Environmental Office, Safety Office, Fire Department, Industrial Hygienist).

(4) Oversee the technical aspects of the self-help program with respect to pest control items and training of family housing residents.

(5) Monitor certification and continuing pest management training for pesticide applicators on the installation.

(6) Coordinate and monitor contracts dealing with pesticide application and keep a copy of each contract on file.

(7) Coordinate with local, State and Federal agencies, as necessary, to conduct the installation's pest management program.

(8) Provide answers to pest management questions from the Garrison Commander, the Army Environmental Center, and the Department of the Army.

(9) Monitor the sale and distribution of pesticides on the installation.

e. Building Occupants.

(1) Apply good sanitary practices to prevent pest infestations.

(2) Use all nonchemical and chemical pest control techniques available through the self-help program to the fullest extent before requesting further assistance from Public Works.

(3) Apply only those pesticides approved for use by Public Works.

(4) Cooperate fully with Public Works personnel and contractors in scheduling pest management operations, to include preparing the areas to be treated.

f. Pest Management Personnel.

(1) Use IPM techniques to the maximum extent possible.

(2) Control pests according to the provisions of this plan.

(3) Operate in a manner that minimizes risk of contamination to the environment and personnel.

(4) Ensure that superiors are kept informed of changes in pest management requirements.

(5) Request pest management supplies and equipment in a Timely manner.

(6) Maintain effective liaison with installation health and environmental officials.

3. GENERAL

Installation Description.

a. Background. The terrain includes mostly level plains to rolling countryside, interrupted by numerous valleys. The post includes two major drainage's, both eventually feeding the Chesapeake Bay. The northern two-thirds of the post drains northerly into the Rappahannock River. The southern one-third drains southerly into the Mattaponi River in the York River Watershed. Fort A.P. Hill is located just east of the fall line between the Piedmont and the Coastal Plain regions of Virginia. As a result of its location, it has many of the characteristics of both regions. The land is gently to moderately rolling, with occasional areas of steep relief. For general classification purposes, the land is divided into four classes: Bottomland, Coves, Slopes, and Upland.

b. Surface Water Resources and Wetlands. There are 14 principal lakes and ponds that cover a total of approximately 330 acres. Lake surface areas vary from less than 3 to approximately 50 acres. Several surface water bodies are open to recreational fishing by military and civilian personnel. Fifteen man-made dams and numerous beaver dams have contributed to the creation of several wetland areas within Fort A.P. Hill. Other wetland areas are present along drainage's within flood plains throughout the base. Streams and creeks draining the installation are not monitored, therefore, water quality is not known. The waters of the Rappahannock River are considered satisfactory for use as public or municipal water supply, propagation of fish and other aquatic life, and other beneficial uses.

c. Climate. The climate of Fort A.P. Hill is classified as modified continental. Summers are warm and humid, with occasional hot and dry periods. Winters are moderately cold with the principle form of precipitation being rain, although there are several snow days each year. The mountains to west act as a partial snow barrier to the continental cold air in the winter. The coldest weather (mid to upper-twenties and the high temperatures in the upper forties) usually occurs in late December and throughout January. The hottest month is usually July with an average maximum temperature of eighty degrees F. The average annual rainfall is 40.1 inches, evenly distributed throughout the year, and the average surface wind speed is 10 miles per hour.

d. Geology. Fort A.P. Hill lies within the Atlantic Coastal Plain Physiographic Province. The area is underlain by unconsolidated sediments that dip gently seaward at less than one percent. The sediments have a 40 to 80 ft. (12 to 24 m) veneer of mixed and layered terrace sands with some clay from which most of the soils are derived. The depth of the bedrock ranges from 400 to 600 ft (122 to 183 m). As a result, there are no outcrops or rock quarries on the installation.

e. Soil Data. The Natural Resources Conservation Service (NRCS) has completed a report on the first soil survey of Caroline County, Virginia. This study details approximately 60,000 acres of Fort A.P. Hill. Fort A.P. Hill soil data can also be found in the Fort A.P. Hill Integrated Natural Resources Management plan (INRMP).

f. Other. Detailed topography descriptions, geology, hydrology, climate, major soil association, vegetation, petroleum, and minerals can be found in the Fort A.P. Hill INRMP. Copies of the INRMP will be procured and maintained in the Pest Control Facility, Bldg. PO1247, commercial phone, (804) 633-8457 or DSN 578-8457.

Wetland delineation's data and endangered and Protected Species data is maintained in the Environmental Branch, Bldg. 1220, and DSN 578-8255.

Topographical maps, Spill, and Integrated Natural Resources Plans are also on file in the Environmental Office Bldg. 1220, DSN 578-8255. As necessary, these documents are used whenever pesticide application is considered in order to evaluate the potential fate and impact on natural resources. All referenced data is currently being reproduced and will be maintained at the pest control facility upon receipt.

g. Inventory of Land Use and Layout of Facilities.

Inventory of Land Use. FAPH is an all-purpose, year-round training facility that encompasses 75,794 acres of federally-owned land and 79 acres of leased land. Overall land use can be divided into two major categories: open operational areas and built-up cantonment areas. The former comprises 74,497 open operational acres, or 98% of the area of the installation, and includes training ranges, impact areas, field training areas, airfield, ammunition supply point (ASP), drop zone, research and development area and several closed sanitary landfill sites. Detailed descriptions of these areas are provided below. The remaining 1,297 acres (2%) of land are used for cantonment areas.

Land Use Tabulation

OPEN OPERATIONAL AREAS	**Approx. Acreage**	**Pct.(%) of Total**
Ranges and Impact Areas	26,721	35.26
Training (Field)	45,866	60.50
Airfield and Aviation Facilities	70*	0.09
Ammunition Storage	20	0.03
Drop Zone	800**	1.06
Research and Development	930***	1.22
Sanitary Landfills (closed)	90	0.12
Subtotal	**74,497**	**98.3**
BUILT-UP CANTONMENT AREAS	Approx. Acreage	Pct.(%) of Total
Administration and Support Facilities	45	0.06
Troop Housing (8 ac.)		
VOQS (3 ac.)		
Administrative Area (6 ac.)		
Community (5 ac.)		

Recreation (22 ac.)		
Medical (1 ac.)		
Family Housing	18	0.02
Recreation	424****	3.30
Service and Storage	75	0.10
Troop Housing and Support Facilities	575	0.76
U.S. Rt. 17 ROW Disposal	160	
Subtotal	**1,297**	**1.7**
TOTAL EXISTING ACREAGE	**75,794**	

* Includes lateral clearances, takeoff safety zone and control tower operations area
** Approximately 1,400 acres required with quantity-distance safety clearances. This acreage is included under Training.
*** Includes 900 acres for Laser Test Facility
**** Includes "wildlife refuge" (Lodge Area) adjacent to Travis Lake.

Classification: Improved and Unimproved Grounds

The existing real estate is classified for management purposes as follows:

Classification	Approx. Acreage	Pct. (%) of Total
Improved Grounds Included athletic fields, lawns, drillfields, built-up areas, grassed airfields, heliports, and other areas intensively maintained.	5,945	7.8
Unimproved Grounds Includes forests, maneuver areas and artillery ranges, active Impact Areas (8,477 ac.), gravel pits (139 ac.), beaver ponds, streams and wetlands (5,856 ac.), roads, trails, and firebreaks (879 ac.) and outgrants (190 ac.)	69,849	92.2
TOTAL	**75,794**	**100.00**

U.S. Route 301 bisects FAPH. The area southeast of U.S. Route 301 includes ranges and several training areas, while the area northwest of the highway is primarily used for maneuver training areas. An 87-acre parcel along the Rappahannock River north of FAPH is leased as a float bridge training area.

The United States Army Garrison (USAG) Headquarters (HQ) facilities are located in the southwestern portion of the installation, immediately west of the main gate on U.S. Route 301. The Post Headquarters and most staff offices are located at the area just west of the main gate off U.S. Route 301. The Army Airfield (AAF), Directorate of Public Works, Direct Support

Maintenance, Range Control, Training Division, Training Aids Support Center (TASC), and Live Firing and Impact Areas are all located to the southeast of the main gate, across from HQ facilities. All other support facilities (ammunition supply point; petroleum, oil, and lubricant (POL) supply; central wastewater treatment facilities) and the 424.5-acre Wildlife Refuge, are located northwest of U.S. Route 301. Training personnel housing is provided at 11 campsites (four permanent, seven tent), 10 of which are located northwest of U.S. Route 301.

Adjoining Jurisdictions – In total, Fort A.P. Hill abuts and or politically and economically interacts with the following jurisdictions:

- Caroline County
- The Town of Bowling Green
- The Town of Port Royal
- Essex County

h. Plan Maintenance.

(a) The pest management plan is maintained by Ben Fulton, (804) 633-8984, the Installation Pest Management Coordinator. Pen and ink changes are made to the plan throughout the fiscal year. The plan is reviewed and updated annually to reflect all changes made in the pest management program during the fiscal year.

(b) Annual updates of this plan will be sent Bill Miller, Pest Management Consultant, US Army Environmental Command, not later than 15 December. Address: U.S. Army Environmental Command, Attn: IMAE EQC/Pest Management, 1835 Army Blvd. Fort Sam Houston, TX 78234

4. PRIORITY OF PEST MANAGEMENT. This section provides background information on each pest category and the specific pests requiring control at Fort A.P. Hill. From early March to late November, roaches, bees/wasps, ants, flies, and fleas constitute the most important pests from the standpoint of annoyance. Ticks, mice, mosquitoes, spiders, bees/wasps, and copperheads constitute the most important pests from the standpoint of disease transmission or medical threats.

a. Disease Vectors and Medically Important Arthropods. Disease vectors are those animals and insects that are capable of maintaining and transmitting disease to man. Fort A.P. Hill routinely performs pest control activities in response to several pests that are potential carriers of disease. A few of the potential disease vectors found at the installation are detailed below in order of their significance.

(1) MOSQUITOES. Mosquitoes are of concern as a nuisance pest, but also are considered to be one of the installation's more important group of disease vectors. Troops training at Fort A.P. Hill can be expected to encounter large populations of mosquitoes throughout the installation. Personnel conducting outdoor activities, especially during early evening hours, can minimize the mosquito nuisance by wearing proper clothing (minimizing exposed skin surface) and utilizing an appropriate mosquito repellant.

Aside from the nuisance problems, mosquitoes represent one of the most important vectors from the standpoint of disease transmission potential. Mosquitoes are capable of transmitting a number of diseases to man. Encephalitis (inflammation of the brain) is one of the most common mosquito borne diseases in the US and continues to be a significant health problem in many parts of the United States. As with the tick population, routine surveillance and control of mosquito populations will likely be necessary while Fort A.P. Hill serves as a troop training installation. Mosquito control will only be initiated upon the coordination with and recommendation of installation medical personnel based upon surveillance data and established thresholds. Good weed control and reduction of breeding sites will help keep them to a minimum. Due to concerns with the spread of the West Nile Virus surveillance has been increased throughout the summer months and fall gravid traps are cleaned twice a week. The mosquitoes collected are sent to USAPHC - North for testing.

Although some mosquito breeding may take place on the installation in artificial containers and small temporary pools of water, most of the mosquitoes, which bite installation personnel, do not come from these sources. Fort A.P. Hill's threat from mosquitoes originates from a large population of Coquillettidia perturbans breeding in surrounding ponds, lakes, and swamps. The larvae of this species do not inhabit open water; rather, they attach to the plant tubules and penetrate the plant with their breathing tubes. Consequently, larval collections of this species should include the random collection of aquatic plants to examine for this particular larval type. Several viruses may be potentially transmitted by mosquito species listed in our recent USAPHCR - NORTH Pest profile, which can be found in Appendix C, this Document.

Adult mosquitoes rarely require fogging for control on the main post area. When required, residual insecticides are applied to vegetative mosquito resting areas. If mosquito-borne diseases are found in the counties surrounding the installation, then larval control may be required on the lakes and ponds. If required Fort A.P. Hill will provide equipment and larvacide for mosquito control in contracted and off post supported areas. This includes all other supported DOD areas that do not belong to Fort A.P. Hill. Coordination for mosquito control on the lakes is discussed in paragraph I, this plan.

(2) TICKS. Ticks are of significant concern at training sites, in housing areas, and sites where maintenance personnel cut brush and weeds during the summer months. The US Army Public Health Command (Provisional) (USAPHC - NORTH), Direct Support Activity-North provides support in conducting arthropod surveillance. Ticks can be controlled by clearing and control burning of brush and weeds, using repellents, and visual inspection of oneself after exposure. For severe infestations, chemical control may be necessary.

The tick population at Fort A.P. Hill is of concern both as a nuisance and a disease vector. Troops training at Fort A.P. Hill can be expected to encounter large numbers of ticks, particularly along the edges between wooded habitats and open field areas. Units training on Fort A.P. Hill are required to maintain adequate field sanitation teams and supplies. Personnel conducting outdoor activities can minimize the tick nuisance by wearing appropriate clothing, applying tick repellant, and performing personal hygiene inspections (with bathing) upon return

to camp. In addition to the nuisance problems, ticks are capable of transmitting a number of diseases to man.

Past tick population studies, conducted by USAPHC - NORTH, have identified three common tick species at Fort A.P. Hill. The American Dog Tick, *Dermacenter variabilis*, is the primary vector of Rocky Mountain Spotted Fever. The Lone Star Tick, *Amblyomma americanum*, is a vector of human monocytic ehrlichiosis (HME) and a suspected vector of Rocky Mountain Spotted Fever (RMSF) (but is considered an unlikely vector of RMSF in Virginia). Ticks are also a primary vector of Lyme disease, most commonly transmitted by the black legged tick, *Ixodes scapularis*. The black legged tick is most common in the northeastern United States; however, its range appears to be broadening. This coupled with recent results from Virginia Department of Health on the epidemiology of Lyme disease in surrounding area indicated that the risk of contracting human Lyme Disease at Fort A.P. Hill is **HIGH.**

Conclusions drawn from USAPHC - NORTH Pest Profile No. 16-61-A12K-93, June 2009 Appendix C, this document and other tick population assessments conducted at Fort A.P. Hill indicate that the overall risk of acquiring a tick borne disease such as Ehrilichiosis Ewingii Infection, Human Monocyctic Ehrlichiosis, and Lyme disease is high. The combined prevalence of disease pathogens and potential tick encounters warrants the use of tick-borne diseases risk reduction measures and emphasis on personnel protection measures for all personnel.

(3) RODENTS. Rodent populations are of concern due to their potential as disease vectors and due to the damage they can cause to facility structures and their contents. There are a number of diseases that rodents can transmit to man. These include, but are not limited to: Plague, Leptospirosis, Hantavirus, Salmonellosis, Lymphocytic Choriomeningitis, Rickettsial Pox, Rat Bite Fever, Tapeworms, and Tetanus. Most of these diseases are transmitted to man via rodent bites or through contact with soils, water, or food contaminated with infected rodent fecal mater and/or urine. Of these diseases, the one of most concern for personnel at Fort A.P. Hill is hantavirus pulmonary syndrome; USAPHC - NORTH Pest Profile 18-NF-5984-97 provides recommendations for preventing exposure to this disease agent (Appendix C).

Rats and mice routinely damage buildings and/or structures as a result of their attempts to gain entry, reach stored foods, or create a nest or den. Their efforts often result in widened openings where pipes or wires pass through exterior walls. Within buildings, rats and mice will enlarge existing openings or create new ones in walls, doors, cabinetry, and furniture.

Mice frequently nest around stationary electrical appliances, damaging wires and affecting appliances performance. Odors from feces and urine are generally offensive to most people, as is any destruction of personal property. Rodent control is frequently required in various buildings located on the installation. Mice are controlled with snap traps, glue boards, live traps, or poisons; and by eliminating holes, cracks and other entry areas wherever possible.

(4) BEES/WASPS: Bees and wasps are found throughout the installation. The stings are painful and cause allergic reactions in some people. These insects are an increasing problem on Fort A.P. Hill. Carpenter bees and wasps are a continuous problem during the months of May, June, July, and August. Yellow jackets, hornets, carpenter bees, and wasps invade Fort A.P.

Hill. About five to ten nests a day are removed in July, August, and September. Nests are either treated or removed by hand. Carpenter bee holes are sprayed and then caulked.

(5) SPIDERS. There is a great potential to find Black Widow spiders (Latrodectus mactans) and a slight possibility to find Brown Recluse spiders (Loxosceles reclusa) in undisturbed places in warehouses, training sites, restrooms, family housing storage areas, and in and around other buildings. Black widow spider populations are very high. Even so due to training and education, few, if any, problems are encountered by Fort A.P. Hill personnel. Bites are treated and reported by the Health Clinic.

(6) SNAKES. Copperhead snakes are a minor problem in early spring, summer, and fall in both training and housing areas. They may be encountered, especially, in training areas. Soldiers are briefed and trained to avoid contact with all snakes. Any bite is treated as a potential medical emergency.

b. **Stored Product Pests.** Stored product pests historically have not represented a major recurring pest problem at Fort A.P. Hill. Minor spot infestations have been routinely identified by building occupants and/or visiting inspectors and were addressed on an as needed basis by the pest control personnel. The Fort A.P. Hill Troop Issue Subsistence Activity (TISA), (Building 1336), has experienced infestations of saw-toothed grain beetles and Indian meal moths. A routine surveillance program and preventive maintenance program have been developed for control of these pests. Food items stored in the Troop Issue Support Activity, the AAFES Shoppette, and food stored in food service facilities may occasionally become infested by stored product pests. Occasional complaints are received from family housing residents. Some of the pests found in stored food in the past include: saw-toothed grain beetles, red flour beetles, Indian meal moths, confused flour beetles, and Khapra beatles (dermestids).

c. Animal Pests. Animal pests periodically require control. Management of these populations is conducted mainly in response to isolated incidents. Nonchemical control is strongly encouraged for the management of these pest populations. Trapping and exclusion from structures is used to contain or control these animals. The species described below may be encountered anywhere on Fort A.P. Hill.

(1) SNAKES. Non-poisonous snakes are present in most habitats in the tropic and temperate parts of the world. Snakes, while not a major pest problem at Fort A.P. Hill, are of concern due to the geographic location of Fort A.P. Hill; within the range of the copperhead. Non-poisonous species may cause alarm in those afraid of snakes. Nuisance areas include the camps and training areas occupied by visiting troops. Snakes in housing areas are controlled using good sanitation and mechanical control methods.

(2) BIRDS/BATS. Ducks on lakes and ponds are not a problem. Birds/bats in buildings are a potential problem on Fort A.P. Hill year-round. The major bird problem occurs during the hatching season when birds get into the vents in family housing and under the eaves of the administration buildings or are identified as the potential cause of mite infestations (a secondary threat). Sometimes they nest or roost in buildings and have to be removed. The high nutrient content of accumulated bird and bat excrement provides and excellent growth medium

for organisms of potential human health concern. The two primary diseases caused by potentially harmful organisms include cryptoccosis and histoplasmosis. Rabies in bats is also an issue of special concern. Although bats are potential carriers of the disease, only a few human fatalities have been attributed to bats. Nevertheless, caution and care is used when handling bats. During removal precautions detailed in USACHPPM TG No. 142, Appendix D, this document, are strictly adhered to and followed.

(3) STRAY DOGS & CATS. Stray dogs and cats occasionally need to be captured on the installation. Stray animal control in the main post area is accomplished by the Pest Control Manager and/or Provosts Marshall's Office. The use of special animal handling gloves and other personal protective equipment to protect against rabies and other potentially harmful diseases is mandatory on Fort A.P. Hill.

(4) BEAVERS. Beavers (*Castor canadensis*) have the ability to reach nuisance levels within the Fort A.P. Hill system and are recognized as a growing issue throughout the Commonwealth of Virginia. The beaver population on the installation has caused, and continues to cause damage to bottomland timber stands, the expenditure of resources to clean out culverts, and repair roads damaged by beaver impoundments. It must be recognized that while beavers can and do, constitute a nuisance, on the installation, their construction of numerous shallow impoundments results in the creation of wetland and waterfowl habitats which have incalculable benefits to wildlife populations. A normal trapping season is used to control beavers.

(5) OTHER ANIMAL PESTS. Skunks, raccoons, and foxes also exist on Fort A.P. Hill. They may occasionally enter the vicinity of administrative or housing areas, searching for food or shelter.

d. Real Property Pests (Structural/Wood Destroying Pests. From an economic perspective, termites are the most detrimental structural pest found on Fort A.P. Hill because of their ability to destroy wood in structures. In recent years, termites have been identified as the main structural pest requiring appropriate management and control at Fort A.P. Hill. Termites are one of a limited number of organisms capable of breaking down the cellulose in wood. Consequently, the wood-framed structures present at Fort A.P. Hill are susceptible to infestation by termites. If left uncontrolled, termites may cause significant damage to wood-frame buildings. Other potential future pests in this category includes: powder post beetles and carpenter ants. The damage done by other structure pests, such as powder post beetles and carpenter ants, is not a regular occurrence. The Fort A.P. Hill inspection process usually identifies infested structures. Annual surveys of wooden structures and treatment when termites and/or other real property pests are found has kept damage to a minimum. Carpenter ants, although currently not a pest significance, may occasionally invade wooden structures, particularly where wet conditions exist.

(1) TERMITES. Termites have been identified as the main structural pest requiring control at Fort A.P. Hill. All wood buildings and structures shall be visually inspected on an annual basis to determine termite presence if possible. Survey procedures include crawl space investigation, as well as inspections of internal areas of the buildings.

(2) POWDER POST BEETLES. Over the years, powder post beetles in structures have not been excessive. Most of the Time the old wood is replaced, which then eliminates the problem.

(3) CARPENTER ANTS. Carpenter ants are potential threats in most of the older buildings on Fort A.P. Hill because they either have a wood frame construction or have aluminum siding. In family housing, ants are treated with pesticide spray, powder, and/or bait. Carpenter ants usually nest in damp wood and in-between aluminum siding. Carpenter ants work in wood to excavate nest galleries. They do not digest it.

e. <u>Household and Nuisance Pests.</u> Flies and crawling insects (ants, cockroaches, crickets, beetles, etc.) and spiders may require control in billets, family housing, food service facilities, warehouses, offices and other administrative buildings. All pets contained in this category are regarded primarily as household and nuisance pests, however, many are also potential disease vectors.

(1) COCKROACHES. At the present time, cockroaches although they are currently a minor problem, still pose the greatest potential nuisance pest control problem due largely to inadequate insect-proofing of old pre-World War II facilities and inadequate troop sanitation practices. Cockroaches have been shown to carry organisms that cause salmonellosis, dysentery, and typhoid fever. Cockroaches may deposit these disease organisms on food products, whether in semi-permanent storage or ready for human consumption. Wherever lax sanitary conditions exist, large cockroach populations can be expected. Housing units are inspected and treated, if necessary, between and during each occupancy. Dining facilities and food service areas are inspected by Preventive Medicine on a monthly basis and treated where problems occur only after surveillance. The most common places for roaches are foodservice areas and housing areas. Cockroaches make up less than 10 percent of the pest management workload which is mainly surveillance, not control. The remainder of the pests in this category constitute minor pest problems on the installation. Proper sanitation and housekeeping will do much to discourage these pests.

(2) FLIES. Flies are considered to represent a threat to individual efficiency and the morale of the entire installation community. Their main characteristic is that of a nuisance pest, however, flies have been found to carry organisms that cause typhoid, dysentery, and other diarrheas. Flies are mainly a nuisance during the summer and early fall. Control of flies is primarily through elimination of breeding habitat, prevention of entry into buildings, high sanitation levels, cleaning dumpster boxes, and Timely disposal of wastes. Serious infestations and nuisance problems are treated after hours.

(3) FLEAS. Fleas sometimes are a problem, mainly in Family Housing units that have pets or wild animals living under the structure. The pesticides used for flea control can be found in the flea pest outline in appendix A, this document. They do a fine job and very seldom is there a need to return within an unreasonable amount of Time. Fleas can also be medically important because they serve as vectors of disease and as intermediate hosts for certain tapeworms that may be parasitic to man. Fleas can be annoying to man due to their blood

sucking habits, which may produce dermatitis (inflammation of the skin) in hypersensitive individuals.

(4) OTHER. The remaining pests in this category (ants, non-poisonous spiders, wasps, hornets, and bees) represent truly nuisance pests that, when occupying internal areas of buildings, can affect efficiency and moral of building occupants.

(a) Non-Poisonous Spiders: A variety of relatively innocuous spiders are common in the housing units (household spiders). Outdoor spiders are treated with a residual spray. Inside spiders are destroyed by hand and a crack and crevice treatment is used around baseboards and window frames.

(b) Ant (Pharaoh): Ants are very common on Fort A.P. Hill, especially in the older wooden buildings. Pharaoh ants prefer warmer buildings and warm areas (80-85 F) in buildings for nesting. These ants are active year-round in houses and portions of large buildings such as clinics and office buildings. Nesting sites include wall voids, cracks in woodwork, stacks of paper, envelopes, bed linens, bandage packs, and desk drawers. Pharaoh ants trail each other and are attracted to grease, meats, insects, and sweets. Special precaution is taken to prevent ant entry into administrative areas where food is present and medical treatment facility patient care areas. Pharaoh ants are treated with pesticide spray, powder, and/or baits. Most of the calls come from family housing or the administration buildings.

(c) Ant (Thief): Thief ants are a potential problem year-round. They nest inside in wall voids and outside under rocks and logs. Thief ants feed on both protein and sweets and will tend aphids, mealybugs, and scales to obtain the honeydew they excrete.

(d) Bird Mites: Urban pest problems ranging from imaginary itches to suspected cases of pubic lice may be eventually diagnosed as bird mites. Bird mites sometimes infest Family Housing units or offices mainly because of deteriorating pre-World War II buildings due to maintenance and resource constraints and the fact that people who work or live there will not request immediate bird nest removal before mites infest the building. Mites are controlled in conjunction with bird and nest removal.

(e) Crickets: Crickets are a common pest in the family housing and office areas on Fort A.P. Hill. Occasionally, they are found in dark moist areas, but seldom require chemical control.

(f) Earwigs: Earwigs are a seasonal problem on Post, lasting typically about six weeks in early fall and mainly in family housing. They live under the slabs and eaves of houses. Units are sprayed with a labeled pesticide and occupants are encouraged to keep the vegetation down around the house and debris cleaned up to control them. Occasionally, they are also found in dark moist areas, but seldom require chemical control.

f. Ornamental Plant and Turf Pests. Trees and shrubs on Fort A.P. Hill can be infested by various insect pests, resulting in damage or destruction of the plants. Bagworms and other pests have caused minor problems annually and may require seasonal chemical treatments, but mostly

mechanical control is used to maintain acceptable pest levels. Pests which damage lawns do periodically cause damage and require occasional surveillance and control.

(1) Bagworms. Bagworms occasionally attack junipers and cedars. These pests require treatment usually in late July on an annual basis.

(2) White Grubs. White grubs are a pest of turf such as on parade fields and yards. Control is usually accomplished through trapping of the adult state.

(3) Fall Webworm. The fall webworm has become a minor problem on Fort A.P. Hill trees around housing and improved grounds areas. Webworms are controlled by cutting them out and spaying if needed. This concern is usually recognized and treated before residents call for support.

(4) Tent Caterpillars. Tent Caterpillars also are a concern on Fort A.P. Hill. They can be found around housing and improved grounds areas. Tent Caterpillars are controlled mechanically by direct removal. Spraying is avoided. This concern is also usually recognized and treated before residents call for support.

(5) Gypsy Moths. Because of the recent introduction of Asian Gypsy Moth into the US, Virginia agriculture officials have initiated increased annual Gypsy Moth surveillance programs to track the movement and reduce the tree defoliation threat of this voracious pest. Fort A.P. Hill coordinates and provides surveillance data working with local and state public health officials.

g. <u>Undesirable Vegetation and Microbial Organisms.</u>

(1) Weed Control. Weed control, consisting of both nonselective vegetation control and aquatic weed control, is conducted at Fort A.P. Hill. Control measures are implemented on an as-needed basis or, in certain cases, every spring, depending upon weather influences, manpower, and budgetary constraints. Weed control is required to maintain fence lines, signposts, parking areas, building perimeters, etc. Weeds along fence lines, on road shoulders, paved surfaces, etc. require control using appropriate herbicides. Some control of unwanted plants is done mechanically (mowing, weed eaters, etc.). It disease is found in trees or ornamentals, the Pest Controller works very closely with Roads and Grounds to see what can be done. The Department of Agriculture and local state universities provide literature and assistance when needed. Most problems are controlled soon after discovery in order to avoid serious problems.

(2) Aquatic Weed Control. Fort A.P. Hill has 14 principle lakes and ponds, which are managed for recreational fishing and natural enjoyment. The lake and ponds may occasionally require mechanical or chemical spot treatments to control aquatic weeds. Aquatic weed control is designed to provide for maximum efficient utilization of available water resources, consistent with the installation mission and wetland protection procedures. The program intent is to increase the potential recreational use of ponds and lakes.

(3) Miscellaneous. Fort A.P. Hill does not have a Golf Course, but does have a driving range which is mowed on a routine basis.

h. Other Pest Management Requirements. Pest controller is responsible, in conjunction with the Provost Marshall's Office, for carcass removal. In addition, the pest management technicians provide services for odor control in buildings and other structures on the installation. Odors may arise from dead animals in walls, crawl spaces, etc, decaying vegetation, molds and fungi; or from other sources. See the "Animal Control SOP" for further details.

i. Quarantine Pests. When required, the local USDA inspector checks incoming materials for the presence of eggs, larvae, or adult pest. Retrograde cargo may be encountered infrequently, and will be inspected for pests on an individual basis.

5. INTEGRATED PEST MANAGEMENT (IPM). Integrated pest management is the use of multiple techniques to prevent or suppress pests in a given situation. Although IPM emphasizes the use of nonchemical strategies, chemical control may be an option used in conjunction with other methods. Integrated pest management strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts.

a. IPM Approach. There are four basic methods of control used in the IPM approach. These methods which are described below are incorporated into each of the IPM Outlines (Appendix A) described below are the heart of IPM, and are descriptive of the philosophy used at Fort A.P. Hill to manage pests; specific IPM measures can be found in the IPM Outlines. While any one of these methods may solve a pest problem, often several methods are used concurrently, particularly if long-term control is needed. For example, screens may be used to prevent mosquitoes from entering buildings, breeding areas may be filled in or drained to eliminate larval habitat, and pesticides may be used to kill adult mosquitoes. Screens will protect people inside, but do little to keep people from being bitten outdoors. Larval control may eliminate mosquito breeding on the installation, but may not prevent adult insects from flying onto the installation from surrounding areas. Chemicals may kill most of the flying mosquitoes, but may miss others. Although chemical control is an integral part of IPM, nonchemical control is stressed. Chemical control is almost always a temporary measure and, in the long run, more expensive. Nonchemical control, which may initially be more expensive than chemicals, will usually be more cost effective in the long run. Nonchemical controls also have the added advantage of being nontoxic, thereby reducing the potential risk to human health and the environment.

(1) Mechanical and Physical Control. This type of control alters the environment in which a pest lives, raps and removes pests where they are not wanted, or excludes pests. Examples of this type control include: harborage elimination through caulking or filling voids, screening, mechanical traps or glue boards, and nets and other barriers to prevent entry into buildings.

(2) Cultural Control. Strategies in this method involve manipulating environmental conditions to suppress or eliminate pests. For example, spreading manure from stables onto fields to dry prevents fly breeding. Elimination of food and water for pests through good

sanitary practices may prevent pest populations from becoming established or from increasing beyond a certain size.

(3) Biological Control. In this control strategy, predators, parasites or disease organisms are used to control pest populations. Sterile flies may be released to lower reproductive potential. Viruses and bacteria may be used which control growth or otherwise kill insects. Parasitic wasps may be introduced to kill eggs, larvae or other life stages. Biological control may be effective in and of itself, but is often used in conjunction with other types of control.

(4) Chemical Control. Pesticides kill living organisms, whether they be plants or animals. At one time, chemicals were considered to be the most effective control available, but pest resistance rendered many pesticides ineffective. In recent years, the trend has been to use pesticides which have limited residual action. While this has reduced human exposure and lessened environmental impact, the cost of chemical control has risen due to requirements for more frequent application. Since personal protection and special handling and storage requirements are necessary with the use of chemicals, the overall cost of using chemicals as a sole means of control can be quite costly when compared with no chemical control methods.

b. IPM Outlines. Integrated Pest Management Outlines may be found in Appendix A. Each major pest or category of similar pests is addressed, by site, in separate outlines. New outlines will be added to Appendix A as new pests or sites are encountered that require surveillance or control.

c. Annual Workload for Surveillance, Prevention, and Control. The number of man-hours expended for surveillance, prevention, and control of pests on Fort A.P. Hill has been placed in Appendix D, this document.

6. HEALTH AND SAFETY.

a. Medical Surveillance of Pest Management Personnel. Medical monitoring is required for all Fort A.P. Hill pest control personnel. Medical surveillance is conducted by the Fort Lee – Kenner Health Clinic to ensure that personnel are fit for the job of Pest Controller, and that there are no physical conditions that would make them especially vulnerable to potential pesticide health hazards. All personnel who apply pesticides on the installation (excluding self-help pest management) are included in a medical surveillance program. This program includes pre-placement, periodic, and pre-termination medical examinations with emphasis on general health, and the cardiovascular, respiratory, hepatic, and renal systems. This program consists of the following elements:

(1) An initial, pre-employment physical examination is conducted to establish that the individual is physically capable of wearing a respirator (if required) and to establish a baseline red blood cell (RBC) cholinesterase level. This physical examination also includes liver and kidney function tests, a complete blood count and a respiratory evaluation. A physical examination of the scope as the initial examination is conducted annually. A list of personnel, who are monitored, as stated above, can be found in table, this IPMP.

(2) When cholinesterase inhibiting substances (CIS) (eg, carbamate or organophosphate pesticides) are used, the RBC cholinesterase levels are monitored at least twice a year (before and after the summer spray season) and more frequently if CIS are heavily used or if the individual exhibits symptoms of CIS poisoning. Removal from work is instituted when the RBC cholinesterase level is depressed to 75 percent of the baseline level or less. Return to work is permitted when the level has returned to 80 percent or more of the baseline level. Some of the common symptoms produced by cholinesterase inhibiting substances are listed in Table 3.

TABLE 3
Common Symptoms Produced by Cholinesterase Inhibiting Substances.

Mild Poisoning	Moderate Poisoning	Severe Poisoning
Anorexia	Nausea	Diarrhea
Headache	Salivation	Pinpoint, non-Reactive pupils
Dizziness	Lacrimation	Respiratory difficulty
Weakness	Abdominal cramps	Pulmonary edema
Anxiety	Vomiting	Cyanosis
Tremors of tongue And eyelids	Perspiration slow pulse	Loss of sphincter control, Convulsions
Miosis	Muscular tremors	Coma
Impairment of visual Acuity		Heart block

(3) Personnel who handle or otherwise come into contact with wild animals on the installation receive rabies prophylaxis. This includes Provost Marshall's Office, wildlife biologists, and pest management technicians. Special gloves and equipment designed for handling wild animals will be procured and used by all personnel involved in such operations.

(4) USAPHC - NORTH Technical Guide TG HSE-00/WP, Medical Surveillance of Pest Controllers, Appendix E, this IPMP, is used as a guide for medical monitoring of pesticide applicators.

(5) All Government pesticide applicators are medically monitored by the Kenner Army Health Clinic, Fort Lee.

b. Hazard Communication.

(1) All Fort A.P. Hill personnel shall be provided access to all appropriate health and safety information pertaining to pesticide use at the installation.

(2) The following items will be made available for use and review within DPW:

- Fort A.P. Hill Integrated Pest Management Plan
- Copy of Fort A.P. Hill Hazard Communication Program
- Copies of all labels of pesticides currently used at the installation.
- Copies of all pesticides material safety data sheets.

(3) The Pest Control Shop will also maintain a complete set of the above information for reference by all pest control personnel. Pest control personnel will also be provided with updated copies of the following:

(a) Technical information bulletins provided by the Armed Forces Pest Management Board.

(b) Pest Management bulletins from USAPHC - NORTH.

(c) Other relevant technical guidance documents as published by USAPHC - NORTH.

(d) Installation pest management personnel are given hazard communication training, which includes a review of hazardous materials in his/her workplace. Following initial hazardous communication classes, additional training is given to new employees or when new hazardous materials are included into the workplace. The following personnel have received HAZCOM training. When trained, DD Forms 1556 will be filed in each employee's personnel records and will be maintained for 30 years. DD Form 1556 copies are provided in Appendix P, this IPMP.

Ben Fulton, Pest Management Coordinator.

Kenneth Henderson, Pest Controller (Full-time)

William Squires, Pest Controller (Term)

(e) Material Safety Data Sheets for all pesticides and other toxic substances used in the pest management program can be found in the Entomology Office, Building PO 1247. MSDSs are made accessible to employees at all Times. Additionally, MSDS are kept in each facility where pesticides are stored or handled. Copies of MSDSs are also kept on each pest control vehicle for pesticides used that day. Fire department, environmental management, and installation safety officers also maintain complete MSDS files.

c. Respiratory Protection.

(1) All pest control personnel shall be enrolled in the installation respiratory protection program and provided respiratory protection equipment to guard against inhalation exposures to pesticide formulations/hantavirus. Respiratory protection shall include an appropriate respirator, face fit testing, leak testing, pulmonary function testing, and training and instruction on the proper use, cleaning, and maintenance of respirators by the Fort Lee.

(2) In accordance with Army Regulation 385-10, facility safety officers are responsible for developing programs to ensure that personnel protective equipment is available and correctly used. All pest control personnel must conform to all applicable post respiratory protection programs.

d. Personal Protective Equipment. Approved masks, respirators, chemical resistant gloves and boots, and protective clothing (as specified by applicable laws, regulations and/or the pesticide label) are provided to pesticide applicators as applicable (see Appendix F, Personal Protective Equipment Training/Issue Records). Personal protective equipment, including respirators, gloves, eye protection, and protective clothing, are to be utilized by all pest control personnel engaged in handling pesticides in accordance with the requirements set forth in the Federal Insecticide, Fungicide, and Rodenticide Act (40 CFR 162), Occupational Safety and Health Administration Standards (29 CFR 1910), DOD Directive 4150.7, Army Regulation 200-5, and individual pesticide labels. Personal protective equipment is to be worn as necessary by all pest control personnel. The proper use and maintenance of personal protective equipment can be found in Appendix G, TG-133, Respiratory Protection Program for Pest Control Personnel.

e. Work Place Monitoring. Annual occupational hazard surveys shall be performed by Fort Lee Industrial Hygiene Section to evaluate occupational Health hazards associated with pest control operations at Fort A.P. Hill.

- Fort Lee Industrial Hygiene Section, Commercial 804-734-9438

(1) In addition, Fort A.P. Hill may be subject to periodic review of its installation pest management program by the US Center for health Promotion and Preventive Medicine (USAPHC - NORTH), Aberdeen Proving Ground, Maryland (when requested by the MACOM pest management consultant). The purpose of USAPHC - NORTH surveys is to review the pest

management program (emphasizing health-related aspects) and to provide technical assistance on the adequacy, safety, effectiveness, and efficiency of the program.

(2) All findings and recommendations provided by work place monitoring surveys shall be addressed and implemented by Fort A.P. Hill in a prompt timely fashion.

f. Laundering Facilities.

(1) Laundering facilities, consisting of a washing machine and dryer, are available at the Pest Control Shop. All pest control protective clothing is laundered at this location. No protective clothing shall be worn or transported off installation grounds. Pesticide-contaminated protective clothing will not be laundered at home under any circumstances. When the facility washing machine is not operational, a contract will be procured on a weekly basis until resolution of the facility problem.

(2) Severely contaminated clothing is not laundered, but is considered a pesticide-related waste and will be disposed of by turn-in to the Defense Reutilization and Marketing Office (DRMO), Richmond or in accordance with current Environmental Office requirements.

g. Emergency Decontamination Facilities. Emergency decontamination equipment, consisting of a shower and an eyewash fountain is located in the Pest Control Shop. All pest control personnel shall be instructed on the proper use of this equipment in the event of pesticide contact with skin or eyes. Appropriate decontamination procedures are provided in Appendix I, this IPMP.

h. Fire Protection.

(1) Building PO 1247 contains all the pesticides stored by Public Works. The building area and land, approximately 19,200 square feet in size, is located within secure, curbed, cement, fenced area. Pesticides are not stored outside under any circumstances. The probability of a fire at all sites is low. The pest management coordinator has provided a pre-fire plan (Appendix H), which includes a layout of the pest control storage facility to the fire department. In addition, pesticide inventories are sent to the fire department every six months. The Fort A.P. Hill Fire Chief will determine which fire control efforts to employ depending on the size and type of fire at the Time a fire call is reported. Maps and other information relating to fire control can be found on file in Entomology and fire department offices.

(2) Minor amounts of pesticides are also provided for sale or distribution at the Post Exchange, Family Housing Self-Help, and the SSSC.

i. Pest Control Vehicles. The pest control vehicles currently on hand are a Dodge utility and Chevrolet dual wheeled truck (see Appendix I) with utility bed having external lockable storage compartments. Pest control vehicles are only used for pest control purposes. Care is taken to secure pesticides to prevent damage to the containers and spillage of the chemicals. At no time are pesticides left unsecured in the vehicles when unattended. Pesticides or contaminated equipment are not placed in the cabs of the vehicles. A portable eye lavage and spill kit are

carried in each pest control vehicle when in use. All vehicles are labeled "Contaminated With Pesticides" as required by federal law.

7. ENVIRONMENTAL CONSIDERATIONS.

a. Protection of the Public. Precautions are taken during pesticide application to protect the public, on and off the installation. Pesticides are not applied outdoors when the wind speed exceeds five miles per hour. Whenever pesticides are applied outdoors, care is taken to make sure that any spray drift is kept away from individuals, including the applicator. Pesticide application indoors is accomplished by individuals wearing the proper personal protective clothing and equipment. At no time are personnel permitted in a treatment area during pesticide application unless they have met the medical monitoring standards and are appropriately protected.

b. Sensitive Areas.

(1) Installation pest control personnel should be aware of the potential impacts associated with pesticide use within sensitive areas at Fort A.P. Hill. A sensitive area is any place where pesticide use could cause great harm if not used with special care and caution. Examples of sensitive areas include barracks, residence, bivouac areas, training areas, campsites, recreational areas, dining facilities, medical clinics, playgrounds, sensitive crops, and all surface water sources. Extreme caution must be employed wherever and whenever the potential for human exposure to pesticides exists.

(2) Special care is given when pesticides are applied in the in patient areas of the health clinic or in family quarters where newborn infants are present. Pesticide label instructions and guidance provided in the AFPMB TG No. 20, Pest Management Operations in Medical Treatment Facilities, Appendix J, this IPMP, are followed.

c. Endangered/Protected Species and Critical Habitats.

(1) In December 1988, DoD and the Nature Conservancy (TNC) entered into a Cooperative Agreement for the purpose of identifying, documenting, and maintaining the biological diversity of DoD installations. In entering into this agreement it was DoD's goal to obtain technical assistance for improving the management of its natural resources, and to gain access to the nationwide network of compatible data to be used to assess the relative significance of each element of biological diversity found on DoD land. In furtherance of the Cooperative Agreement, The Virginia Department of Conservation, Division of National Heritage (DNH), acting on behalf of the TNC; the US Army Corps of Engineers, Mobile District; and the Fort A.P. Hill Military Reservation signed an agreement in 1991 that established the framework under which comprehensive inventories of biological diversity of Fort A.P. Hill can be undertaken.

(2) DNH has completed two installation-wide biological diversity (i.e., Natural Heritage) inventories to date. Impact Areas were not surveyed due to the hazards associated with unexploded ordnance. The current technical report on the existing rare, threatened, and endangered species found at Fort A.P. Hill was completed in March 2010. This report entitled

The 2005-2008 Reinventory of Natural Heritage Resources of Fort A.P. Hill was consulted extensively before completion of this section of the IPMP.

(3) Fort A.P. Hill's unique diversity of habitats supports a substantial population of State and Federally listed endangered, threatened, and rare species. The DNH identified two federally threatened plant species; four state threatened plant and animal species, and 30 state rare plant and animal species, one of which was subsequently identified as a federal Species of Concern. Listed species occur within twenty-four distinct Conservation Sites.

(4) The bald eagle (Haliaeetus leucocephalus) and the small whorled pogonia (Isotria medeoloides) are examples of two of the installation's more notable, resident listed species for which sensitive areas have been identified by Fort A.P. Hill.

(5) The small whorled pogonia is a member of the orchid family, and one of the rarest plant species found in North America. This plant is currently protected as an endangered plant species under the Federal Endangered Species Act of 1973. Several colonies of the small whorled pogonia have been identified since its first discovery in 1982. The conservation of these colonies is integrated into the installation's land management practices through the environmental review process. The small whorled pogonia prefers relatively mature woodlands free of a dense under story. The plant is most often found in well-drained uplands. The habitat and surrounding environment of the small whorled pogonia colonies are recognized as critically sensitive areas by this plan. All outdoor pesticide applications in and around habitat areas, such as described above, should receive prior use approval from the Environmental Office.

(6) In addition to the small whorled pogonia, a very rare species of rush, *Juncus caesariensis*, was also identified on the grounds of Fort A.P. Hill in 1982. In general, rushes prefer very moist soils often found in low areas in and around waterways and surface water bodies. Habitat areas containing this rush are also regarded as sensitive by this plan. All outdoor pesticide applications in and around these habitat areas should receive prior use approval from the Environmental Office.

(7) Bald eagles utilize habitat at Fort A.P. Hill. Ground observations of bald eagles have been made around water courses on the base. Aerial surveys have been conducted each spring to confirm roosting patterns along regional drainages, as well as to determine the locations of the nests within the installation boundaries. Adult eagles have been observed each year since the first nest sighting in 1990. The bald eagle population has increased. Since 1990, several additional nests have been constructed, several of which have produced fledgling eagles. It is anticipated that given the available land area, forest cover, and forage habitat quality, this trend may be expected to continue to the extent the Fort A.P. Hill ecosystem can accommodate additional breeding pairs. Because the bald eagle exists at Fort A.P. Hill, **all surface waters are identified as sensitive areas** by this plan.

d. Environmental Documentation.

(1) An environmental assessment titled Final Environmental Assessment for the Integrated Pest Management Plan on Fort A.P. Hill was completed and a Finding of No

Significant Impact (FNSI) was signed on 15 July 2004. It was concluded in the FNSI that the pest management activities performed at Fort A.P. Hill will not have a significant adverse affect on the environment.

(2) An update to the Fort A.P. Hill Integrated Pest Management Plan was completed by in-house personnel in April 2011. Updates to the plan include current findings for the Endangered/Protected Species and Critical Habitat section, formatting changes, NEPA documentation dates, points of contact, Environmental Protection Agency codes, and the inventory of applicable chemicals was updated to reflect products commercially available for use on the installation. These updates were documented in a Record of Environmental Consideration and it was determined that the updates were categorically excluded under provisions of Categorical Exclusion (b)(3), 32 C.F.R. Part 651 and no extraordinary circumstances exist as defined in 32 C.F.R. Sec. 651.29(b).

e. Pesticide Spills and Remediation. A pesticide spill cleanup kit is maintained in the pesticide storage area of building 1247. Pesticide spill cleanup, decontamination, disposal, notification procedures, and a list of components of the spill kit is provided in Appendix G of this IPMP. A spill cleanup kit is kept on each pest control vehicle. Additional information on pesticide spills can be found in Appendix A of AFPMB TG No. 15, which is located in Appendix H, this document, and in the installation spill plan located at the pest control facility. All reportable pesticide spills are reported to Central Dispatch in the Directorate of Emergency Services.

f. Pollution Control/Abatement Projects. There are currently no pollution control or abatement projects on Fort A.P. Hill.

g. Pollution Prevention (P2). This pest management program complies with the applicable sections of Executive Order 13148 of April 21, 2000, Greening the Government Through Leadership in Environmental Management.

h. Prohibited Activities. Pesticide misuse-which includes use inconsistent with the label is a violation of federal Law. In accordance with DoD policy (see DoD 4150.7-P), Fort A.P. Hill personnel will record and report any instances of pesticide misuse and falsification of records by contractors to the Commonwealth of Virginia. Furthermore, Fort A.P. Hill personnel will cooperate with Virginia regulators and the EPA in any subsequent investigation or actions.

(1) At no time will a pesticide be used in any manner, which is inconsistent with its label.

(2) No pesticide will be used whose registration has been suspended or canceled by the EPA or the Commonwealth of Virginia.

(3) Herbicides will not be used to control weeds in areas where children play.

8. ADMINISTRATION.

a. Contracts.

(1) The Fort A.P. Hill Entomology Office is currently managed by one pest control technician. Because of these staff constraints, all termite pre-treatments for new construction and forestry pine release operations are contracted. All other pest control services are provided by the pest control. Termite treatments are included in the specifications of all new contracts; hence treatments IAW applicable product recommendations and labels are the sole responsibility of the general contractor. Fort A.P. Hill retains the right to and does inspect and review all facets of each pretreatment operation. This is accomplished by the Installation pest control technician.

(2) Current policy requires pest control services and/or the PMC to review all construction contracts to see if IPM techniques can be employed to engineer out future or potential pest problems.

(3) Fort A.P. Hill is evaluating the potential use of umbrella contracts for all pest control services. Performance work statements and instructions are maintained on file in the office of the Pest Management Coordinator. Currently no installation services are provided under fixed cost contracts. When contract operations exist, copies of all contracts and their supporting quality assurance surveillance plans will be kept on file in the offices of, both, the installation pest controller and Pest Management Coordinator.

(4) In accordance with DoD policy, all contract personnel who apply pesticides on Fort A.P. Hill will be considered as “commercial applicators” by the Commonwealth of Virginia Department of Agriculture and Consumer Services. Depending on the type of application, certification will be in one or more of 21 different categories. The contractor will provide photo copies of employee certification documents to the PMC before performing services on the installation.

b. Job Orders.

(1) The Public Works pest controller still performs pest surveillance and control understanding service orders (SSO's). The SSO's cover work performed indoors and outdoors in 1) family housing units, 2) food handling buildings and the Health Clinic, and 3) all other buildings on Fort A.P. Hill.

(2) Vacant Family housing units are serviced through work order requests and completed by the Pest Controller. Work is performed under a SSO and charged against a revolving account between Family Housing and Public Works.

(3) Work requests for buildings other than those mentioned above are performed under a separate SSO, which includes all buildings on the installation.

c. Interservice Support Agreement. All support is provided by the Pest Controller in accordance with the comprehensive Integrated Pest Management program for Fort A.P. Hill.

d. Agricultural Outleases.

(1) Presently Fort A.P. Hill has agricultural outleases (for a list, see page 13, “Land Use” section. Fort A.P. Hill currently maintains approximately 190 acres of land available for agricultural outlease. The installation’s agricultural outlease policy has historically allowed leases to apply agricultural chemicals to the leased lands. This policy has encouraged optimum use of the leased lands by the lessees and provided an additional pest control function beyond the operations carried out by installation personnel. The lessees' pest control activities are specific for agricultural pests and are localized (site specific) in nature. Historically the primary focus of the farmers tends to be on weed control. Typical herbicides used are: (Harmany Extra), (Weedone), (Gramoxone), (Bicep), and various (Atrazine) products. Typical weed problems consist of: morning glory, lambsquarter, and pigweed. Insecticides used are: (Fortress 5G) and (Karate). Typical insect problems are: corn rootworm.

(2) Fort A.P. Hill recognizes the need for certain agricultural pest control applications and will, therefore, continue to allow the lessee the opportunity to protect crops and enhance yields. Under this plan, however, there is additional pest control restrictions required of all leases. These restrictions are designed to provide Fort A.P. Hill with current information regarding all pest control activities conducted at the installation. The following restrictions are placed on the pest control activities of the leases with regard to land leased at Fort A.P. Hill:

(3) Prior to any agricultural chemical application to an outleased property, the lessee shall notify the Installation Pest Management Coordinator of the intent to perform chemical pest control. The notification shall be in writing and contain the following information:

- Proposed date of application.
- Pesticide to be applied (including label) and rate.
- Application method (equipment to be used).
- Application site.
- Pest to be controlled.

(4) The PMC shall notify the pest controller and the environmental coordinator of the lessee’s intent. These two offices, along with the PMC, will review the lessee’s control plan to determine adequacy with this pest control plan, as well as DoD, state, and federal regulations. The lessee will be permitted to perform the planned pest control activity only after review and approval of the lessee’s control plan by the above referenced offices. Any recommendations presented by Fort A.P. Hill shall be incorporated as part of the lessee control plan, otherwise, permission for application shall be denied.

(5) The Fort A.P. Hill Pest Controller shall be on site during any chemical pest control operation conducted by a contractor on Fort A.P. Hill property. All applications will be under the direct supervision of the Pest Controller. Any deficiencies in application technique or personal or environmental safety noted by the Pest Controller will be corrected prior to

continuance of the control action. If a deficiency cannot be corrected in the field, the control action will be halted.

e. Resources (Current and Proposed) Staffing. The following personnel are involved with pest management on Fort A.P. Hill.

- Directorate of Public Works pest management technicians.
- Natural Resources specialists.
- Installation pest management coordinator.
- Preventive medicine specialists.
- Veterinary food inspectors.

(1) Materials and Equipment. All materials, buildings and equipment are furnished by the Government. Only pesticides and pesticide application equipment required by the IPM program are maintained on the installation. Pesticides are ordered as required to maintain at least a three month supply but not more than a one year supply in stock. Pesticides which are required for use during a specific time of year (e.g., herbicides applied in the spring when weeds are emerging) are ordered in a timely manner to ensure effective application. The inventory of pesticides, provided as a separate notebook, lists the pesticides on hand Fort A.P. Hill and also includes Pesticide Stock Record MSDSs, and product labels which detail products actually used on a daily basis. An initial inventory of pesticide application equipment used at Fort A.P. Hill is provided as Appendix L. These inventories are updated as changes occur. As a minimum, an updated pesticide inventory is included in the plan's Annual Update.

(2) DPW Pest Control Facility (Mixing and Storage Sites).

(a) General Description. The Entomology Shop, 19826 EP4 Compound, Building PO 1247, contains an office area, a mixing and formulation room, a storage room, and wastewater treatment room. It is located in a secure, fenced compound of approximately 19,200 square feet. The building is constructed of cinder block walls, concrete floors, and asphalt over metal roof. The office, lavatory, and storage areas have a drop ceiling. The facility provides personnel with a lavatory, locker room, shower, and laundry washing machine and dryer. The mixing facility is plumbed in a manner that precludes the possibility of a pesticide from entering the sanitary sewer system. The design of the building is such that any spillage of materials in the mixing/formulation and storage room or the exterior fill site will drain to a centrally located floor drain that has been sealed and capped where it can be contained and cleaned up. A drawing on the facility layout is included in the pre-fire plan, Appendix I, this document. All precautions will be taken to prevent spilling pesticides. If possible, all pesticides should be mixed in the mixing area.

(b) Mixing, Formulations, and Spill Containment. Pesticides are mixed in a well-ventilated area in Entomology Shop, 19826 EP4 Compound, Building PO 1247 on Fort A.P.

Hill. The mixing/formulation area is a 320 square foot (approx.) room, adjacent to the storage room. All mixing, formulating, loading of backpack sprayers, foggers, and cleaning of small equipment takes place in this room. The room is equipped with a hardwired and continuously active ventilation system. The concrete floor has been sealed and is sloped to a centrally located floor drain that has been sealed and capped in the floor. Any inadvertently spilled materials would flow to the low area and be easily cleaned up. Shelving and ventilation has been updated with all shelves now lined with metal and a protective lip. The Industrial Hygienist from Fort Lee, is scheduled to perform extensive air quality testing (on an annual basis) to ensure that the mixing area has the proper ventilation system. There is a backflow prevention device on every fill hose used in the building.

(c) Storage Rooms. Pesticides are stored in the Entomology Building PO 1247, which was completed in 1988. It has a gross square footage of 1,900. A plumbed eye lavage and deluge shower are provided within the Building. This facility conforms to Army and Federal standards. A floor plan for this facility is on file in the pest control facility. There is no general fire suppression system in the building. The building is equipped with fire extinguishers in the storage and mixing rooms as well as in the office area. All pesticides are located in the storage room and arranged by hazard categories and compatibility. This room is divided near the middle by a partial partition extending in from the walls on both long sides. The rooms (together) have approximately 430 square feet of storage area. This room is equipped with an active ventilation system. The system is hardwired by a switch located inside the door leading from the mixing into the office area. There were two floor drains in the storage area, one located centrally in each of the "rooms". These drains have been plugged with pipes and screw caps. The concrete floor is sloped toward each of the plugged drains effectively providing about 1,300 gallon capacity containment.

(d) Spill Equipment. A pesticide spill kit is maintained in the pesticide storage and mixing area. An emergency eyewash and safety shower is located in this room near the outside door.

(e) Additional pesticides are stored in a Prefabricated (PREFAB) building immediately behind the Entomology Building PO 1247-A. This (PREFAB) building was purchased, in 1992, specifically for pesticide/equipment storage. The walls, floor and roof are made of steel. It has a gross square footage of 220 feet. The building is used for pest control storage only.

f. Reports and Records.

(1) Adequate records of all pest management operations performed by engineering personnel, PVNT MED, VETS, contractors, agricultural lessee (when present), and self-help are maintained on the installation.

(2) Forms for daily pesticide application and surveillance recording are maintained by the installation pest controller. These forms provide a permanent historical record of pest management operations for each building, structure or outdoor site on the installation. The DD Form 1532-1 is maintained by the pest management technician.

(3) The monthly Pest Management Report (Alternate-DD Form 1532) is used to report all pest management operations on the installation. These reports are prepared and maintained by the Fort A.P. Hill pest controller.

(4) The Pest Control Facility/Environmental Management Division maintains a current inventory of stored pesticides. Copies of the inventory are sent to the Fire Department every six months.

(5) Copies of termite inspection reports (DD Forms 1070) are forwarded to the pest management coordinator as requested.

g. Training.

(1) Certification. Government (Fort A.P. Hill) employees who apply or oversee the application of pesticides are DOD-certified. Training and certification is conducted by the Army Medical Department Center and School, Fort Sam Houston, Texas. Certified personnel are recertified every three years. Installation pest management personnel are certified in the appropriate EPA categories in order to perform pest management operations directly or to supervise other employees conducting pest control within these categories (see Table 4). Copies of training certificates are found in Appendix L this IPMP.

Table 4
Certification Requirements for Fort A.P. Hill Pest Management Personnel

Name	Activity/Function	EPA Categories*
Kenneth Henderson	Environmental Mgmt Div Pest Controller Quality Assurance Evaluator	2, 3, 5,6,7,8
William Squires	Environmental Mgmt Div Pest Controller	3, 5, 6, 7, 8
Ben Fulton	Fish and Wildlife Section Pest Management Coordinator Quality Assurance Evaluator	1

*Forest Management (EPA category 2).

Ornamental and turf pest control (EPA category 3).

Aquatic pest control (EPA category 5).

Right-of-way pest control (EPA category 6).

Industrial, institutional, structural and health-related pest control (EPA category 7).

Public health pest control (EPA category 8).

(2) Continuing Education and Training. Personnel who are certified in pesticide application attend local pest management classes, workshops, seminars, etc., in order to keep abreast of pest problems and pest management techniques which are unique to the area surrounding the installation. This is particularly true when dealing with vegetation control since many of the herbicide labels indicate that choices in strength and application technique should be based on local conditions. By attending local seminars, pest management personnel learn to solve problems on the installation by talking to people in the same geographic area which have solved similar problems in the past. The time and labor expended in this type of training is easily recouped through improved efficiency in pest control operations on the installation. Local pest management training consists of at least eight hours per year; this is in addition to any offsite recertification training, such as the DOD course. Other personnel who deal directly with pest control operations, but who may not need to be certified, are also encouraged to attend local seminars to better understand the pest management needs of the installation.

h. Quality Assurance/Quality Control.

(1) The QAE for the pesticide/herbicide pest management contracts is DOD-certified in the EPA categories for which pest control work is performed on the installation.

(2) A written quality assurance surveillance plan is used to evaluate the work being performed by the pest management technician.

i. Design/Review of New Construction. Construction projects on Fort A.P. Hill are reviewed with pest prevention and control in mind. The Pest Controller and/or PMC review the design of new buildings or other structures and conduct a pest evaluation in the constructed facility prior to completion of the project to ensure that insect and rodent entry points and potential harborage have been eliminated.

j. 5-Year Plan. Many administrative elements of the program such as recurring and projected requirements are addressed in the 5-year plan. This document serves as a tool to identify these requirements and the timeframes for implementation. The 5-year plan also helps installation personnel to anticipate program changes and requirements. This Plan is under revision and will be placed in Appendix N, upon completion.

9. COORDINATION – DOD, Other Federal, State and Local.

a. The Army Pest Management Program is responsible for protecting personnel and material from illness and damage by pests, wherever in the world they may be. The program includes

both medical and operational responsibilities. While these responsibilities do overlap, medical representatives focuses on preventing and minimizing medical consequences of pests and pest management operations while the Assistant Chief of Staff for Installation Management and the Army Environmental Center concentrate on safe, effective implementation of day to day pest management operations and environmental considerations of pest management operations. A list of organizations involved with or who have impact on the Army Pest Management Program is found in Appendix O. Their addresses and a description of their responsibilities are also included.

b. The Army Environmental Command Pest Management Consultant reviews the pest management plan and gives special attention to any pesticide application that: uses restricted use pesticides, involves a pesticide that may significantly contaminate surface or ground water, includes 259 or more hectares (640 acres) in one pesticide application, may adversely affect endangered or otherwise protected species or habitats, or involves aerial application of pesticides.

c. Liaison is maintained between the Pest Management Coordinator and Preventive Medicine personnel at Fort Belvoir to determine the prevalence of disease vectors and other public health pests in the area surrounding the installation.

d. The pest controller is primarily responsible for capturing and removing stray dogs and cats on the installation. The pest controller coordinates additional assistance for stray animal control throughout the post area with the Provost Marshall's Office.

e. Control of mosquito larvae on the lakes (e.g., during an encephalitis outbreak) are coordinated with the following agencies:

(1) Commonwealth of Virginia – Proposed actions are coordinated with health officials and environmental personnel.

(2) County Health and Environmental Personnel – proposed actions are coordinated with personnel in counties affected.

(3) Bureau of Land Management and US Fish and Wildlife Service – these services are consulted whenever any proposed action may be detrimental to the endangered species of birds.

(4) Department of Environmental Quality – responsible for managing the waterways in and around Fort A.P. Hill.

f. Predator control, if required, must be coordinated with the Virginia Department of Game and Inland Fisheries.

g. As necessary, installation personnel coordinate with the Corps of Engineers to assure that pesticide application, such as termite pretreatment for new construction, is properly performed and documented.

10. SALE AND DISTRIBUTION OF PESTICIDES.

a. Family Housing Self-Help.

(1) The Self-Help (U-Do-It) program director is Ms. Linda Wax, DSN 578-8445. Due to the small size of the permanent population, Fort A.P. Hill Offers a Self-Help Video and a detailed colorized handout for active duty personnel and their spouses. Self-Help information is available for review upon request and is maintained at the Self-Help Store and the Pest Control Shop. The Pest Controller will teach a class on entomology and IPM techniques upon request. Through the handouts and, if requested, the classroom instruction occupants are told what they could possibly find in or around their units during their stay on Post and what they should do in case of a problem.

(2) IPM items are available to family housing residents through the self-help store, operated by the Housing Manager. Self-help is open from 0730-1530, Monday-Friday and is closed on Saturday and Sunday. Video instruction on IPM techniques for pest encountered by housing occupants is given as needed. Records are kept of items issued to housing occupants; this information is provided monthly to the Pest Controller. The products recommended for distribution are as follows:

- Combat bait stations – for cockroach control.
- Glue traps – for cockroach and mouse control.
- Snap traps – for mouse control.
- Fly Swatters – for mechanical control.
- Self-Help Pest Control Guide.

(3) ANNUAL IJO'S, SOO'S: General pest control will be performed under annual service orders.

b. Self Service Supply Center (SSSC). The SSSC, located at 1 Hopemont Unit #9, is open from 0830-1630, Monday-Friday and is closed on Saturday and Sunday. SSSC **no longer** issues pest control products for soldiers:

c. Other Activities.

(1) AAFES. All pesticides sold in the Post Exchange, 11807 Wilcox Drive, are registered by the EPA and Commonwealth of Virginia. No restricted use products are sold. Pesticide products are grouped into several separate categories: products applied to pets for ectoparasite control, repellents, household, and lawn and garden products. A spill cleanup kit is on hand in the immediate vicinity of the home and garden pesticide storage area. Store personnel are familiar with the use of the cleanup kit and with installation spill contingency

procedures. Additional guidelines on pesticides in exchanges can be found in paragraph 10-4h, AR 40-5.

(2) Veterinary Clinic. Fort A.P. Hill does not receive direct support for domestic animals.

11. PEST MANAGEMENT SERVICES PROVIDED TO OTHER ACTIVITIES.

a. Tenant Activities. Pest control services are provided to all tenant activities on Fort A.P. Hill. This includes: Health Clinic, all Reserve Centers, and Post Exchange.

b. Agencies Located Off the Installation. There are no other agencies located off the installation, which require pest management.

12. REGULATED PESTS.

a. Quarantine Pests. The USDA, when required inspects incoming household goods and other cargo for the presence of Gypsy Moth. There are no other requirements for plant or animal quarantine on Fort A.P. Hill.

b. Noxious Weeds. The installation complies with all Federal and State noxious weed laws. When noxious weeds are encountered on the installation, care is taken to ensure that nearby nontarget plants are not adversely affected. The Commonwealth of Virginia lists four noxious weed species. These are Johnson grass (*Sorghum halepense*), multiflora rose (*Rosa multiflora*), musk thistle (*Cardus nutans*), and curl thistle (*Cardus spp.*) State law requires these species be eradicated whenever they are found. Currently approved herbicides are used in accordance with the directions and restrictions listed on the label.

c. Poisonous Plants. Poisonous plants which can cause skin irritation are regularly encountered on Fort A.P. Hill; these include poison ivy (*Toxicodendron radicans*), poison oak (*Rhus toxicodendron*), and poison sumac (*Rhus vernix*). Additionally, poisonous plants which may cause injury if ingested include Jimsonweed (*Datura stramonium*) and nightshade (*Solanum nigrum*). Control of poisonous plants is mostly limited to areas adjacent to family housing and intensively used campsites, due to the increased possibility of human contact.

13. PEST MANAGEMENT REFERENCES.

a. Federal and State Laws.

(1) Section 136 et seq. of Title 7, United States Code, federal Insecticide, Fungicide and Rodenticide Act (FIFRA) as amended.

(2) Title 29, Code of Federal Regulations, 1993 revision, Section 1910, Occupational Safety and Health Standards.

(3) Title 40, Code of Federal Regulations, 1993 revision, Section 165.10, Recommended Procedures and Criteria for Storage of Pesticides and Pesticide Containers.

(4) The Virginia Pesticide Control Act, 1995 Edition.

(5) Regulations Governing Pesticide Applicator Certification under Authority of Virginia Pesticide Control Act, VR 115-04-23.

(6) Virginia Noxious Weed Law, 1996 Revision

(7) AR 40-5 Medical Services Preventive Medicine

b. Military Regulations.

(1) DoD Instruction 4150.07, DoD Pest Management Program, 29 May 2008.

(2) AR 11-34, The Army Respiratory Protection Program, 2 May 2008.

(3) AR 40-5, Preventive Medicine, 15 October 1990.

(4) AR 200-1, Environmental Protection and Enhancement, Administrative revision, dated 13 December 2007.

(5) AR 200-2, Environmental Effects of Army Actions, 23 December 1988.

(6) AR 200-3, Natural Resources Land, Forest, and Wildlife Management.

(7) AR 200-1, Pest Management, 13 Dec. 2007

(8) HSC Reg 40-30, HSC Operating Program – Preventive Medicine Guidelines for Implementation of a Preventive Medicine Program for MEDCEN/MEDDAC, 16 March 1989.

(9) HSC Pam 40-3, Environmental Health Program, October 1985.

c. Technical Manuals.

(1) TG 5-629, Weed Control and Plant Growth Regulation, 24 May 1989.

(2) TG 5-632, Military Pest Management Handbook, March 1994.

d. US Army Public Health Command Technical Guides.

(1) No. HSO-00-WP, Guide for the Medical Surveillance of Pest Controllers, March 1976.

(2) No. 138, Guide to Commensal Rodent Control, December 1991.

e. Armed Forces Pest Management Board TG's

(1) No. 14, Protective Equipment of Pest Control Personnel, March 1992.

(2) No. 15, Pesticide Spill Prevention Management, June 1992.

(3) No. 16, Pesticide Fires: Prevention, Control, and Cleanup, June 1981.

(4) No. 20, Pest Management Operations in Medical Treatment Facilities, October 1989.

(5) No. 21, Pesticide Disposal Guide for Pest Control Shops, October 1986.

(6) No. 29, Integrated Pest Management in and Around Buildings, July 1994.

(7) No. 36, Personal Protective Measures Against Insects and Other Arthropods of Military Significance, August 1996.

f. Other References, Manuals, Books and Guides.

(1) MIL-STD-903C, Sanitary Standards for Commissaries, 20 November 1986.

(2) MIL-STD-904A, Guidelines for Detection, Evaluation and Prevention of Pest Infestation of Subsistence, 13 January 1984.

(3) MIL-STD-909, Sanitation Standards for Food Storage Facilities, 31 August 1989.

(4) MIL-HDBK-1028/8A, Design of Pest Management Facilities, 1 November 1999.

(5) TB Med 561, Occupational and Environmental health, Pest Surveillance, June1992.

(6) Mallis Handbook of Pest Control, 7th Edition, PCT Books, 4012 Bridge Ave, Cleveland, OH 44113, 1100 pp., $89.00

(7) Soil Survey of Cumberland and Hoke County, Virginia, USDA Soil Conservation Service, 1984.

g. Periodicals.

(1) Pest Control (Magazine Published Monthly), P.O. Box 6215, Duluth, MN 55806-9915.

(2) Pest Control Technology (Magazine Published Monthly), PCT, 4012 Bridge Ave, Cleveland, OH 44113.

APPENDIX J – FORT A.P. HILL
ENDANGERED PLANT SPECIES SURVEY PROTOCOLS

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Threatened & Endangered Plant Species Field Survey Protocols:

Swamp Pink (*Helonias bullata*)

Environmental & Natural Resources Division
Directorate of Public Works
Fort A.P. Hill

27 September 2012

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Cover photograph:
Swamp pink (*Helonias bullata*), photo by Fort A.P. Hill Environmental and Natural Resources Division

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* Jason Applegate is recognized as an *Approved Surveyor* for swamp pink by the Virginia Field Office of the U.S. Fish & Wildlife Service.

1. Introduction

Swamp pink (*Helonias bullata*) is a federally-threatened, state-endangered, obligate wetland plant with a historical distribution from New York to northern Georgia (USDA 2012). As part of Fort A.P. Hill's (FAPH) contribution to the conservation of this species, the Directorate of Public Works, Environmental and Natural Resources Division (ENRD) regularly conducts two types of surveys for swamp pink—demographic monitoring surveys and field reconnaissance surveys. Demographic surveys monitor population dynamics and habitat conditions overtime; field reconnaissance surveys are conducted to ensure that proposed installation projects will not negatively impact any previously unknown swamp pink colonies.

2. Plant Identification

Swamp pink is a perennial, evergreen herb with a short stout rhizome. Emergent leaves are typically 3.5-10in long, 0.5-2in wide, and form basal rosettes (ramets). The leaves are smooth and generally widest approximately two-thirds of the way from the base of the rosette. Leaves are green and typically come to a soft point (Godfrey and Wooten 1979, Radford *et al*. 1968 Figure 1). The clonal reproduction of swamp pink is not well understood; although, multiple rosettes are believed to sprout from single rhizomes (USFWS 1991).

Individual flowers are small (~ 0.5in wide) with pink petals and lavender-blue anthers. When blooming, 30 to 50 flowers will aggregate to form a distinctive inflorescence (raceme) at the top of a thick fleshy stalk (scape) up to three feet in height (Godfrey and Wooten 1979; Radford *et al*. 1968; Figure 2). Flowering occurs from April-May, but only a small percentage of the population blooms annually (USFWS 1991).

Figure 1. Swamp pink rosette

Photo by Fort A.P. Hill ENRD

Figure 2. Swamp pink inflorescence

Photo by Fort A.P. Hill ENRD

Swamp pink flowers produce seed capsules which often contain many small (≤ 0.25in) seeds. Mature seeds are not easily wind dispersed and tend to fall close to the parent plant; however, the USFWS (1991) suggests swamp pink seeds are capable of aquatic distribution. Swamp pink is the only species featured in the genus *Helonias*, family Liliaceae, which illustrates this species' unique singularity. Consequently, swamp pink is not easily mistaken with other species in the field—especially when flowering.

2.1 Analogous Species

Figure 3. Sterile small green wood orchids

©DCR-DNH, Irvine T. Wilson (VA Bot. Association 2012)

The "small green wood orchid" (*Platanthera clavellata*) often co-habitats with swamp pink, and both species share a resemblance when neither plant is flowering (Figure 3). The leaves of this orchid are similar to those of swamp pink in size and shape; however, this orchid does not form distinct rosettes, and often emerge as solitary leaves. This orchid's leaves are also generally silver-green on the underside with parallel veins clearly visible; swamp pink leaves are generally uniform in color on both surfaces and have less conspicuous veins. The flowers of both species are born on solitary stalks and form racemes; yet, the orchid flowers are greenish-white, fewer in number, and bear no resemblance to the flowers of swamp pink in size and shape (Radford *et al*. 1968 and personal observation).

3. Habitat Description

Throughout its range, typical swamp pink habitat is characterized as boggy, water-saturated (but not stagnant) humus-rich soil (Stevens 2000). This species requires acidic, permanently wet locations, and does not tolerate inundation. In Virginia, this habitat is largely classified as Acidic Seepage Swamp (CEGL006238 – *Acer rubrum - Nyssa sylvatica - Magnolia virginiana / Viburnum nudum var. nudum / Osmunda cinnamomea - Woodwardia areolata* Forest, Red Maple - Blackgum - Sweetbay / Possumhaw / Cinnamon Fern - Netted Chainfern Forest) (http://usnvc.org/, last accessed 26 September 2012). On FAPH, swamp pink is typically found below springs, seeps, and along small streams and wetlands where water levels are stable and subject only to brief, temporary, flooding.

Drainage in swamp pink habitat is typically diffuse with braided channels interlaced around saturated hummocks in a sandy or peaty substrate (Van Alstine *et al.* 2010). Swamp pink can be found in bogs in open sun, but most often occurs under broken canopy cover and/or shrubby understory (Stevens 2000). Swamp pink is found with many plant associates that differ depending on the characteristics and location of the site. Perhaps, the species most commonly allied with swamp pink is sphagnum moss (*Sphagnum* spp.), but other associates often include red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), sweet pepperbush (*Clethra alnifolia*), high-bush blueberry (*Vaccinium formosum*), sweetbay magnolia (*Magnolia virginiana*), possumhaw viburnum (*Viburnum nudum)*, skunk cabbage (*Symplocarpus foetidus*), and cinnamon fern (*Osmunda cinnamomea*) (Stevens 2000).

Figure 4. Acidic Seepage Swamp on Fort A.P. Hill

Photo by Fort A.P. Hill ENRD

4. Plant Survey Methodology

Swamp pink surveys are typically conducted between May-July to ensure sufficient time for all rosettes to emerge; however, early season surveys can be completed if conducting a flowering survey, and late-season surveys can be conducted through early September if necessary to accommodate scheduling conflicts and training. Although surveys are initiated after the primary swamp pink blooming season, the flower stalks are still generally present, which provides information about flowering extent and frequency. Surveys to examine swamp pink flowering trends are best conducted in April.

FAPH regularly conducts two types of surveys for swamp pink—demographic surveys and field reconnaissance surveys. Demographic surveys are conducted to monitor population dynamics and habitat conditions overtime; field reconnaissance surveys are conducted to ensure that proposed installation projects will not negatively impact any previously unknown swamp pink colonies. All surveyors shall avoid direct contact with plants to minimize the transfer of contaminants and materials.

4.1 Demographic Monitoring

FAPH's demographic monitoring is a systematic approach of tracking population dynamics and habitat conditions of known swamp pink colonies.

Prior to conducting field surveys, site-specific Geographic Information Systems (GIS) maps are developed that feature the landscape and terrain features (e.g., aerial imagery, contours, streams, wetlands, forest cover, etc.) necessary to navigate the survey area. Survey areas generally include the swamp pink colony's spatial extent ("footprint") and all suitable habitat upstream, downstream, and/or laterally.

Once in the field, the surveyor(s) should navigate from a known reference point (e.g. road intersection, stream crossing) to the nearest edge of the survey area. Once there, the surveyor should hang a strip of roll flagging at the upland edge of the wetland as a reference point (Census Point 00); flagging should match the color and pattern scheme specified by ENRD.

From the reference point, the surveyor will systematically traverse non-permanent, transects within the wetland area; the space between transects should be adjusted to best-fit the terrain and vegetation conditions. While traversing, the surveyor will hang strips of roll flagging denoting the occurrence of swamp pink plants (individuals or clusters of individuals) (Figure 5). The following information will be written on each census flag: (i) initials of surveyor(s), (ii) colony ID (sub-colony if needed), (iii) date, and (iv) sequential number (e.g. Census Point 00, 1, 2, 3, etc.). The location of each census point will be recorded with a GPS unit. The spacing and number of census points will vary based on the spacing between swamp pinks, the density of the midstory vegetation, and the overall difficulty of traversing the habitat. The number of rosettes, clumps, flowering individuals, and the degree of herbivory (if any) will be recorded at each census point. The field data sheet for demographic monitoring is included in Appendix I.

Figure 5. Census Point flagging and Swamp Pink

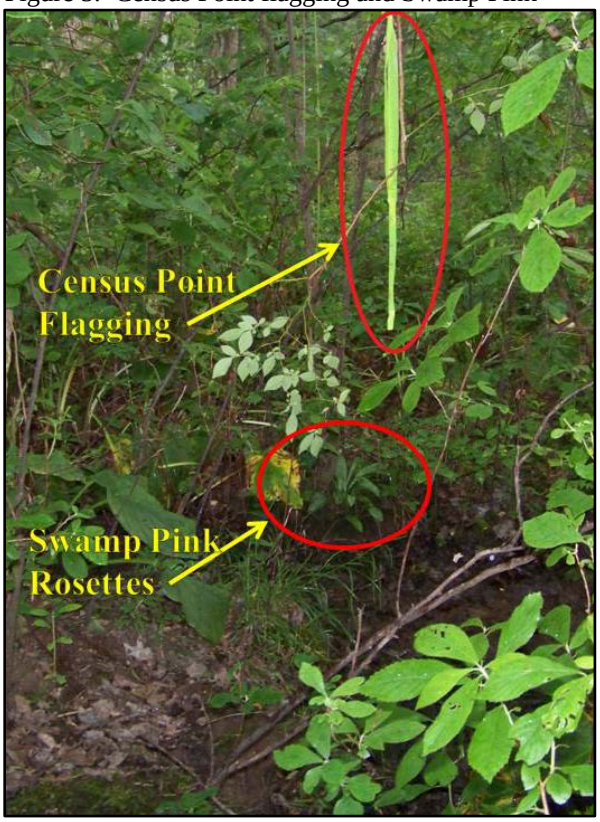


Photo by Fort A.P. Hill ENRD

Specific information collected at each colony includes:

- Colony name
- Geographic position (e.g. Lat/long, military grid, etc.)[1]
- Date (mm/dd/yy)
- Surveyor(s)
- Census point (i.e. flagging) number
- Number of distinct rosettes
- Number of rosette clumps (genets)[2]
- Number of flowering individuals
- The presence, absence, type (invertebrate or vertebrate), and/or degree of herbivory

Once all quantitative data have been collected, the surveyors will provide a habitat description that includes characteristic overstory, midstory, and herb-strata species. Additional assessments of the impacts by beaver (*Castor canadensis*), non-native invasive plants, and anthropogenic disturbances will also be recorded. A narrative description of the hydrologic regime status (i.e. impaired and to what extent and why) as well as observations about the presence/absence of fire in the colony and adjacent upland will be documented. The surveyors will record a general assessment of the light regime which highlights openings in the colony or adjacent upland. Light regime observations do not need to be quantified, but they should reflect the amount of light reaching the forest floor (e.g. canopy is open, closed, broken, etc.). Any other features unique to the colony should also be documented (e.g. evidence of cultural resources, unexploded ordinance, etc.).

At least four representative photographs of the colony and habitat will be taken. Important features (e.g. beaver evidence or invasive plants) should also be photographed. A close up of the data sheet focusing specifically on the colony ID, date, and location is recommended to delineate between photos captured at multiple colonies using the same camera; this will aid greatly during post-processing.

All culverts upstream and downstream of a colony within 500 meters (1640 feet) of a swamp pink colony will be evaluated to determine if hydrologic function is impaired. Special attention will be paid to record evidence of obstructions caused by beavers.

4.2 Field Reconnaissance Surveys

Reconnaissance surveys are conducted prior to the initiation of a proposed project or land management activity (e.g., timber harvest) that is projected to occur within 150-feet of a wetland or stream system. The procedural steps to complete a field reconnaissance survey are nearly identical to those used when conducting demographic surveys; except the survey area for field reconnaissance is all suitable habitat within or adjacent to a proposed project site. In the event a

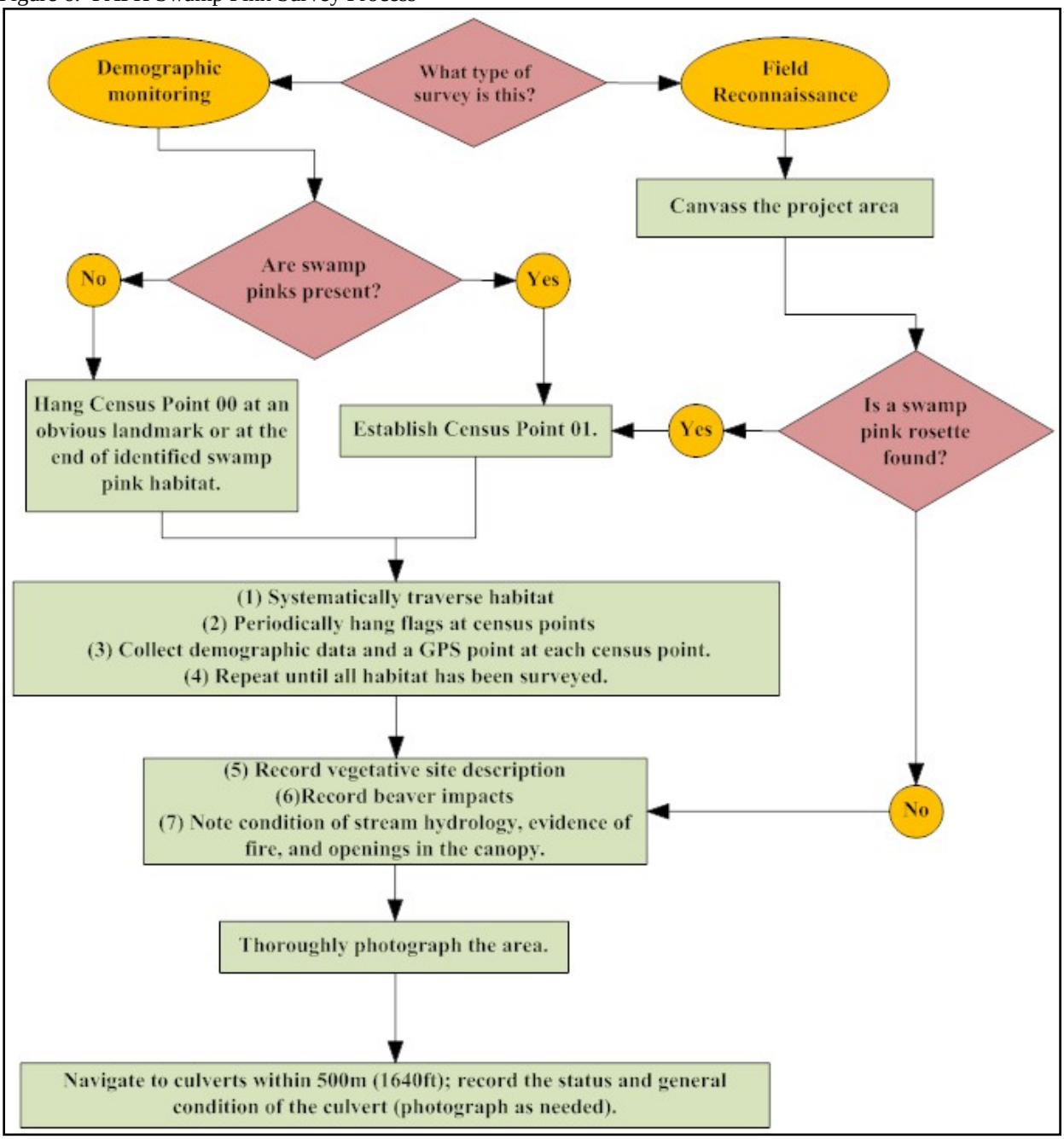
[1] Mandatory for new finds, with known colonies, however, it is only recommended that a general coordinate is recorded from the perceived center mass of the colony.

[2] To ensure consistency between surveys and surveyors, a minimum distance of two feet between groupings of rosettes is required in order to be considered separate clumps.

new swamp pink occurrence is discovered during field reconnaissance, the surveyor shall implement demographic monitoring protocols accordingly. A provisional colony name, generally a narrative associated with the project, will be used pending confirmation of the discovery. Once confirmed, the new colony will be assigned a permanent colony identifier.

Regardless of positive or negative findings, the entire expanse of suitable habitat within and adjacent to the proposed project site must be traversed and thoroughly photographed. A habitat description will be recorded along with any unique observations (e.g. beaver impacts, unexploded ordinance, etc.).

Figure 6. FAPH Swamp Pink Survey Process



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Appendix I
Swamp Pink Data Sheets

Surveyor(s) : _____ **Date :** _____

Colony ID : _____ **Coordinate :** _____

Sub-Colonies: a b c d N/A

Census Point	No. Rosettes	No. Clumps	No. Flowering	% Herbivory					Type (check all that apply)	
				trace	< 25%	25-50%	50-75%	75-100%	Invertebrate	Vetebrate

Page _____ of _____

Surveyor(s) : _____ **Date :** _____

Colony ID : _____ **Coordinate :** _____

Sub-Colonies: a b c d N/A

Tree Strata Species		Shrub Strata Species		Herbs and Woody Vines	
Beaver Impacts	**Light Regime**	**Invasive species**	**Evidence of Fire**	**Hydrologic Regime**	
Culvert Name:_____		**Culvert Name:**_____		**Culvert Name:**_____	

Page _____ of _____

Threatened & Endangered Plant Species Field Survey Protocols:

Small Whorled Pogonia (*Isotria medeoloides*)

Environmental & Natural Resources Division
Directorate of Public Works
Fort A.P. Hill

28 November 2012

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Cover photograph:
Small Whorled Pogonia (*Isotria medeoloides*), photo by Fort A.P. Hill Environmental and Natural Resources Division.

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* Jason Applegate is recognized as an *Approved Surveyor* for small whorled pogonia by the Virginia Field Office of the U.S. Fish & Wildlife Service.

1. Introduction

Small whorled pogonia (SWP, *Isotria medeoloides*) is a federally-threatened, state-endangered, plant with a historical distribution across most of eastern North America (Weakley 2011). In accordance with the Sikes Act (as amended), Fort A.P. Hill (FAPH) actively manages Threatened and Endangered Species within its jurisdiction to (1) ensure no net loss in military readiness and operational capability, and (2) provide a conservation benefit to listed species to preclude the designation of Critical Habitat on FAPH. As part of FAPH's contribution to the conservation of this species, the Directorate of Public Works, Environmental and Natural Resources Division (ENRD) regularly conducts two types of surveys for SWP—demographic monitoring surveys and field reconnaissance surveys. Field reconnaissance surveys (hereafter referred to as "recon" surveys) are conducted prior to land or water disturbing activities to locate previously unknown colonies of SWP within or adjacent to the proposed project site. Population demographic surveys are conducted to census individual plants within known colonies and quantify characteristics regarded as indicators of health and vigor. Both types of surveys are conducted during the United States Fish and Wildlife Service (USFWS) designated SWP survey period of June 1 – July 20 (USFWSa 2012).

2. Plant identification

SWP is a perennial herbaceous orchid (Orchidaceae) with four to six leaves arranged in a single, false whorl (Figure 1). Plants are typically two to 14 inches tall, but generally grow larger when developing a flower (Vitt 1991; Gawler 1988). The defining characteristic of SWP is a green, "fleshy," stem that terminates into the leaf whorl (Weakley 2011). Similar-looking species include the Indian cucumber (*Medeola virginiana*), which has a wiry narrow stem, and the large whorled pogonia (*Isotria verticillata*), which features a fleshy purple stem. In addition, the woody vine Virginia creeper (*Parthenocissus quinqifolia*) can be distinguished by serrated leaf margins and jointed stems (Weakley 2011). Each of these analogous species has been observed among SWP colonies at FAPH (Figures 2-4).

Figure 1. Small whorled pogonia

Photo by ENRD

Figure 2. Large whorled pogonia

Photo by ENRD

Figure 3. Indian cucumber root

Photo by ENRD

Figure 4. Virginia creeper

Photo courtesy of Purdue University (2002)

3. Habitat description

SWP habitat is generally characterized as mature, early-successional, deciduous or evergreen-deciduous forest, with an open or moderately open understory (i.e. fully stocked mid-successional mixed woods) on gentle slopes (<30%). The forest floor is generally dominated by leaf litter with sparse seedling cover (Mehrhoff 1980; Figure 5). Ephemeral streams, or dry gullies are an often associated micro-habitat features (USFWS 2012b; Ware 2000). The underlying soils in Virginia colonies are usually highly acidic (pH 4.3 – 5.5.) and nutrient poor (Mehrhoff 1989; Rawinski 1986); however, the soil was determined to have a pH of 6.2 at a SWP found in a calcareous ravine in the Coastal Plain of Virginia (Nancy Van Alstine pers. comm. 2010). SWP habitat is also generally proximal to some type of permanent canopy break such as a wetland edge or trail (Ware 2000).

Figure 5. SWP habitat at FAPH

Photo by ENRD

SWP may have a number of common plant associates (Table 1) or be completely devoid of any associates (WSSI 2008). However, SWP habitat spans many forest types and vegetation associations across its geographic distribution (Mehrhoff 1980; Ware 2000).

Table 1. Common plant associates typical of SWP habitat at FAPH+

Tree stratum		**Shrub stratum**		**Herbaceous stratum**	
Common name	*Scientific name*	*Common name*	*Scientific name*	*Common name*	*Scientific name*
White oak	*Quercus alba*	Flowering dogwood	*Cornus florida*	Striped wintergreen	*Chimaphila maculata*
American beech	*Fagus grandifolia*	American holly	*Ilex opaca*	Partridge berry	*Mitchella repens*
Tulip-poplar	*Liriodendron tulipifera*	Red maple	*Acer rubrum*	Sassafras	*Sassafras albidum*
Hickory	*Carya* spp.	Mountain laurel	*Kalmia latifolia*	Naked-flowered tick trefoil	*Desmodium nudiflorum*
Black oak	*Quercus velutina*			Indian cucumber root	*Medeola virginiana*
Scarlet oak	*Quercus coccinea*			Christmas fern	*Polystichum acrostichoides*
Northern red oak	*Quercus rubra*			American strawberry bush	*Euonymus amercanus*
Sweetgum	*Liquidambar styraciflua*			Solomon's seal	*Polygonatum biflorum*
				False Solomon's seal	*Smilacina racemosa*
				Virginia creeper	*Parthenocissus quinqifolia*
				Catbrier	*Smilax glauca*
				Large whorled pogonia	*Isotria verticillata*

+ WSSI (2008) and data collected at known colonies from 2010 – 2012

For the purpose of conducting recon surveys, it may be more practical to list the types of vegetation conditions that are not suitable habitat for SWP given the wide latitude of vegetation types that offer potential habitat. The following forest/vegetation types on FAPH are not suitable (i.e. improbable) habitat for SWP based on a review of the current literature, past survey results of FAPH, and a general understanding of life history requirements of SWP:

- <u>Regenerating forests</u>
  Deciduous, evergreen, or deciduous-evergreen forests that have regenerated following even-aged silvicultural treatments <30 years ago

- <u>Loblolly pine plantations</u>

- <u>Highly pyric environments</u>
  Vegetation (forest and non-forest) types that undergo regular intervals (one to five years) of prescribed burning and/or wildland fire

- <u>Non-forest vegetation associations</u>
  Open fields, wetlands, or other non-forest vegetation associations

- <u>Invasive species sites</u>
  Non-forest vegetation associations with total (or near-total) coverage by non-native and/or invasive species (e.g. autumn olive, *Elaeagnus umbellata*)

4. Plant Survey Methodology

4.1 Field Reconnaissance (Plant Search) Surveys

Recon surveys may be conducted year-round to identify potential SWP habitat; however, any such habitat identified before June 1st or after July 20th would need to be resurveyed during that period the following (or any subsequent) year. Recon surveys may be conducted in-house by qualified ENRD staff or by a qualified third-party contractor. In Virginia, recon surveys are only valid for two years (USFWSc 2012). Most in-house recon surveys are conducted in advance of proposed forest management timber harvests, construction, demolition, and/or any work order that requires ground or water disturbance.

The first step in the recon survey is to generate project-specific Geographic Information System (GIS) maps of the recon site. The maps should include a multitude of installation shape files including, but not limited to, the most current remotely sensed imagery, elevation contours, wetlands, forest cover, and existing natural heritage occurrence data. Recon areas will include the project site and all potential SWP habitat adjacent to the project site. The additional area outside the project site is included in the survey to ensure that the proposed action does not negatively impact any previously unknown SWP occurrences through the alteration of ambient light levels via manipulation of the tree canopy within the project area. The project site may be physically delineated by roll flagging tied to trees (typical for actions associated with forest management), or the project site may be best delimited based on landmarks (e.g. changes in land cover, access trails or roads etc.).

Once the perimeter of the project area has been traversed, the project site and all adjacent habitat are surveyed along transects with a spacing of approximately 20 feet. The distance between transects should also be adjusted to best-fit the terrain features, forest type, and to ensure complete survey coverage. If a new SWP colony is discovered, the surveyor will determine its spatial extent and the number of individual emergent stems. The surveyor will delimit the colony by affixing strips of roll flagging (color designated by ENRD) to trees along the colony perimeter. The surveyor will also collect positional data using a global positioning system (GPS) unit to capture the spatial extent of the colony and the point location of each emergent stem. A follow-up demographic survey (see Sec. 4.2) will be conducted as soon as possible (Figure 6).

4.2. Demographic Monitoring

Demographic plant surveys quantify known SWP colonies' growth and developmental information to gauge colony vigor and track the presence/absence of individual plants over time. In 2012 FAPH entered into a formal Memorandum of Agreement (MOA) with the Smithsonian Environmental Research Center (SERC) to participate in their SWP propagation research. Thus, the current demographic monitoring protocols have been developed to remain consistent with techniques implemented by SERC. To conduct demographic monitoring:

STEP 1: Review the existing colony area using installation GIS data to become familiar with the colony's size and coverage—avoid unnecessary foot traffic within the colony when possible.

STEP 2: Conduct a recon survey of the colony and its adjacent habitat to identify emergent (previously known and newly discovered) and dormant plants (previously known). Previously discovered plants are demarcated with colored pin flags (PVC stake) affixed with a metal tag imprinted with a unique plant identifier (Figures 6-7).

STEP 3: Mark newly discovered plants with a colored pin flag (PVC stake) approximately four inches (10 cm) from the stem affixed with a metal tag imprinted with a unique plant identifier (see below).

STEP 4: Replace damaged or faded pin flags as necessary.

STEP 5: Collect data on each plant (see below). DO NOT touch the plant; decrease the risk of transferring disease or fungus from plant to plant and avoid contaminating the plant with human skin oil and other contaminants.

Figure 6. SWP with pin flag and metal tag

Photo by ENRD

Figure 7. SWP colony at FAPH

Photo by ENRD

The following data are collected for each emergent stem (Appendix I):

- Plant identifier

Each plant (emergent stem) receives a unique identifier to facilitate year-to-year monitoring. Nomenclature follows a *YY-XX* format where *YY*= is the year of the initial discovery of the plant and *XX* is the two digit sequential number assigned to the plant (e.g. 99-03 is the third plant newly discovered in 1999 for a given colony).

- No. of Leaves

Record the total number of leaves (including basal) associated with a given plant.

- Height

Record the height of the plant (mm) from the base of the stem to the top of the leaf whorl (excluding reproductive structures).

- Leaf Whorl Diameter (A)

Measure the cross-sectional length of the leaf whorl (mm) measured tip to tip.

- Leaf Whorl Diameter (B)

Rotate 90° from measurement "A," and measure the cross-sectional length of the leaf whorl (mm) measured tip to tip.

- Leaf Whorl Diameter

Calculate the average of the two leaf whorl diameters (mm).

- No. of Flowers

Record the number of flowers developed (if any).

- No. of Fruit Capsules

Record the number of fruit capsules the plant developed (if any).

- Herbivory

Record (checkbox) if herbivory is present for a given plant.

- Herbivory type

Identify the type of herbivory (if any) that is present: invertebrate (i.e., insect) or vertebrate.

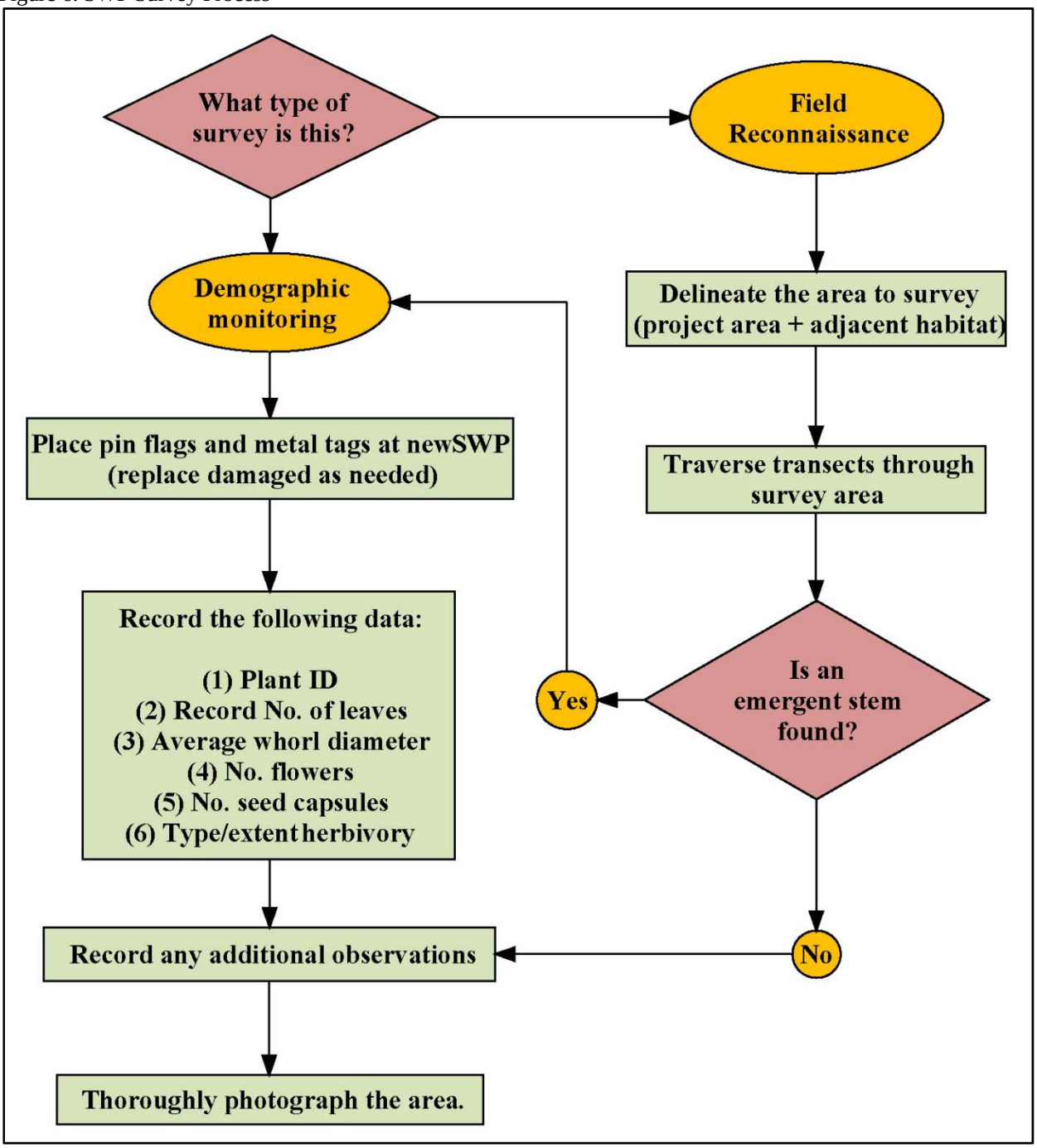
- Herbivory extent

Record the extent of the herbivory for a given plant. Note: Do not assign values based on type, just record overall damage. Do not assign a percent damage. Record a "0" if no browse, "1" if trace amounts of browse evident (to one leaf or the entire plant), "2" if > 0.5 and < 1 leaf browsed, "3" if > 1 and < 2 leafs browsed, "4" if > 2 and < 3 leafs browsed, "5" > 3 and < 4 leafs browsed, "6"if > 4 and < 5 leafs browsed, "7" if > 5 and < 6 leaves browsed, "8"if all leaves browsed, "9" if entire plant is browsed.

- Miscellaneous Comments

Identify any additional observations about the stem and/or habitat (e.g. presence of fungus on the stem, evidence of wildland fire, newly felled snags, etc.).

Figure 6. SWP Survey Process



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Appendix I
Small Whorled Pogonia Demographic Monitoring Data Sheets

Colony ID	Sub-colony ID	Date	Surveyor(s)				Observations				
Plant ID	No. of Leaves	Height (mm)	Whorl Diam. A (mm)	Whorl Diam. B (mm)	Whorl Diam. (mm)	No. of Flowers	No. Seed Capsules	Herbivory present?	Herbivory type	Herbivory extent	Comments

APPENDIX K – RECORD OF ANNUAL INRMP TRI-PARTITE COORDINATION

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APPENDIX L – FORT A.P. HILL
INTEGRATED VEGETATION MANAGEMENT PLAN

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1.0 INTRODUCTION

Fort A.P. Hill's (FAPH's) Integrated Natural Resources Management Plan (INRMP) identifies the full suite of land and natural resources management undertaken to meet statutory and operational requirements. In summary, largely undeveloped FAPH landscape requires a significant degree of cross-functional coordination and leveraging of equipment and personnel to effectively manage the land to meet doctrinal training requirements. Timber harvesting, prescribed burning, mulching, shredding, mowing, and chemical control of vegetation are all accomplished annually to maintain the natural setting of the FAPH landscape as a premiere training venue for America's Defense Forces.

As articulated in the component plans of FAPH's INRMP, the Directorate of Public Works (DPW), the Directorate of Plans, Training, Mobilization, and Security (DPTMS), and Tenant Units collaborate and coordinate to manage vegetation conditions year-round, utilizing a variety of mechanical, chemical, and pyrological techniques. These practices create, maintain, or restore the desired terrain conditions necessary to meet doctrinal training requirements (i.e., *Missionscape*).

Integrated vegetation management is critical to ensure that each functional area is resourced according to its requirement and they are efficient with the resources provided to avoid redundancies or omissions.

2.0 AREAS OF PRIMARY RESPONSIBILITY

All land management functional elements have the capability to mechanically control vegetation to various degrees; however, chemical control shall be conducted by or under the purview of the DWP Pest Manager. Pyrological control of vegetation is conducted by the Installation Forestry Program (DPW-ENRD) and supported by the Fire Department.

Table L-1. Summary of land management functional elements on FAPH

Directorate / Responsible Office	General Area of Responsibility	Specific Areas of Responsibility
DPW		
Operations & Maintenance	Open areas / roads and trails	Primarily road shoulders and open cantonment areas
Environmental & Natural Resources Division (Forest Management)	Semi-forested and forested areas	Forested
Environmental & Natural Resources Division (Fish & Wildlife Management)	Open areas	Unimproved / semi-improved grounds
Pest Control	Range & Training Facilities, open areas	Vegetation control around targetry; Invasive plant control, nuisance species control

Directorate / Responsible Office	General Area of Responsibility	Specific Areas of Responsibility
DPTMS		
Range Operations (ITAM)	Open areas / trails	Semi-improved and unimproved open areas; low water crossings; interior maneuver trail shoulder
Tenants +		
Various	Open areas	Semi-improved and unimproved open areas

+ Formal tenant responsibilities are identified in the Inter-service Support Agreement between the US.S. Army (FAPH) and the Tenant Unit.

3.0 VEGETATION IMPACTS TO MILITARY USE OF THE LAND

An unmanaged landscape can negatively impact all aspects of military use of the land. Aviation activities can be restricted due to the growth of trees into the glideslope creating a physical threat (obstruction) to incoming or outgoing aircraft. Line of sight for indirect fire (e.g., howitzers) can be restricted in location and consequently frequency of training if visibility between the target and the observer becomes obstructed by vegetation. Dense forest undergrowth, downed trees, and / or logging residuals can pose a counter-mobility challenge to dismounted maneuver training. Additionally, the vegetation composition, structure, and contiguity can pose a risk for wildfire given the incendiary nature of military munitions and pyrotechnics. Open areas with dense herbaceous cover offer ideal habitat for disease-carrying ticks (e.g., human ehrlichiosis). Consequently, vegetation management can have significant impacts on the utilization of the training resource as well as the efficacy of those resources in training to doctrinal standard.

Establishing or re-establishing trails requires DPW-ENRD involvement to ensure erosion and sediment controls are sufficiently addressed and in place as well as to ensure endangered species and cultural resources are not at risk for harm based on the location of these activities. However, trails and water crossings (i.e., culverts or low water crossings) are not considered part of the Missionscape per se.

4.0 COORDINATION PROCESS

Coordination between the DPW, DPTMS, and Tenant units to maintain or attain the desired Missionscape occurs across a variety of mediums:

a. DA Form 4283: A formal request for work through the DPW or request to the DPW to review “self-help” work is documented and staffed through a DA Form 4283 (Facilities Work Request Form). Once submitted to the DPW, this document is assigned a unique identifier for tracking and execution upon the availability of funds.

b. Monthly Meetings: The DPW-ENRD and DPTMS-Range Operations hold monthly meetings to discuss the status of current and any projected Range Projects as well as provide updates

on NEPA actions, Water Quality Program projects, and discussion of upcoming natural resources requirements.

c. Direct Contact: Project proponents often engage the DPW-ENRD prior to submitting a DA Form 4283 or completing NEPA documentation to ensure all requirements are met prior to initiating formal project review. This can help expedite the entire process by addressing critical requirements early on in the planning stage.

d. Pre-Con Meetings: The execution of military construction (MILCON) requires a significant level of coordination between the requesting Command, the U.S. Army Corps of Engineers (USACE) that oversees and administers the construction contract, the DPW (Engineering, ENRD, AND Master Planning Divisions), and DPTMS. Pre-construction meetings at the various stages of design development provide the opportunity to identify requirements and address issues or concerns regarding the long-term management of the facility, including the management of adjacent areas that may have an impact on the use of the facility.

e. NRSA: Natural Resource Site Assessments (NRSA) are an internal DPW-ENRD process for identifying proposed projects that may impact natural resources and provide an opportunity for review and concurrence by the major Program Areas within ENRD (e.g., Cultural Resources, Endangered Species). Though primarily leveraged to review proposed forestry activities, the NRSA process has been used to review LRAM projects and non-MILCON construction projects.

f. Timber Scoping: Prior to the submission of a timber harvest packet to the USACE for solicitation, the Forestry Branch convenes an cross-Directorate review of proposed timber harvest areas for a final review to ensure all management concerns have been identified and sufficiently addressed.

g. Annual Prescribed Burn Plan: The DPW-ENRD Forestry Program coordinates with the DPW, DPTMS and Tenant Units on annual prescribed burn requirements. Input on areas where fuels management may be required or where additional consideration is warranted are identified in this process.

h. RCMP / ITAM AWP: The FAPH Range Complex Master Plan, a component of which is the Integrated Training Area Management (ITAM) Plan, identifies land condition requirements for maneuver training areas, including access trails, low water crossings, open area condition, and maneuver corridor requirements. The DPW-ENRD has direct input into the requirements build for this plan which cross-walks to the FAPH INRMP in terms of desired future landscape conditions.

4.0 COORDINATED PLANNING AND PROJECT EXECUTION

Advanced and often extensive coordination among the various functional areas to ensure that all requirements are identified early in the process and all regulatory approvals have been obtained prior to ground-breaking activities. While exact requirements are project-specific, key regulatory triggers include:

a. The area (ft2) of proposed land disturbing activity if grading is required

b. Complexity of proposed activity and timeline/source for engineering drawings

c. Level of NEPA review

d. Proximity to Streams or Wetlands

e. Proximity to Cultural Sites

f. Proximity to Endangered Species Sites

g. Proximity to Bald Eagle Nests

h. Time since last survey for:
   i. Streams/Wetlands
   ii. Cultural Sites
   iii. Endangered Species
   iv. Other ecological resources (e.g. bald eagle nests)

Often there are multiple land management prescriptions that must be executed sequentially by the various functional units over a length period of time (Table L-2). Should one prescription fail to be executed or executed below standard, the result is a setback in attaining the desired land condition and the potential loss of time/resources already invested. This can negatively impact the realism or efficacy of the military training exercises being conducted thereby failing to provide the “Best Training and Support – Anywhere” creed of FAPH.

5.0 SUMMARY

The FAPH DPW (O&M, ENRD, and Pest Management), DPTMS (ITAM), and Tenant Units coordinate extensively and regularly to ensure the physical environs of the Installation meet military mission requirements. Equipment, personnel, and resources are leveraged among the various functional elements in a collaborative manner to ensure Warrior training at FAPH meets the requirements for Full Spectrum Training Operations.

Table L-2. FY16-20 Missionscape Projects

PROJECT	VEGETATION MANAGEMENT PRESCRIPTIONS			
	TREE CLEARING	PRESCRIBED BURNING	MECHANICAL VEGETATION CONTROL	CHEMICAL CONTROL
Restore Upper Zion IA LOS	Between OP 2 and OP 5 (2013)	Annual (Fall)	Completed with Robotics FY12-14	Aerial application proposed FY15
Restore Daniels IA LOS	West of OP8 and OP10 (if possible)	Annual (Fall)	Proposed FY16-18	Aerial application proposed FY19
Range 33 Enhancement	None projected	Annual (Fall)	Completed with Robotics FY14	Limited to perimeter of target emplacements
Rt. 301 Fuel load reduction	Required	TBD	TBD	TBD
Maneuver Corridor	Required	Required	Annual (rotationally)	TBD
Maneuver Lanes Objectives	Completed 2003	Every 2-3 years	Annually (variable level of effort per site per year)	None projected
Maneuver Space Reclamation	Required for some sites – not all	Required 1 year after tree clearing	Annual (bush hog / mowing / planting)	None projected
Landing strip Glideslopes	Required periodically	Often required 1 year after tree clearing	Annual (bush hog / mowing / planting)	None projected

PROJECT	VEGETATION MANAGEMENT PRESCRIPTIONS			
	TREE CLEARING	PRESCRIBED BURNING	MECHANICAL VEGETATION CONTROL	CHEMICAL CONTROL
Landing Zones	None projected	None projected	Annual (bush hog / mowing / planting)	None projected
Establish / Re-establish Firebreaks	Required	None Projected	Annual Mowing	Ground application as needed
Maneuver Trail Widening	Required	None Projected	Annual Mowing	None projected
Restore Laser Range LOS	Required	Annual	Annual (bush hog / mowing)	TBD
Restores Drop Zone LOS	Required	Annual	Required (for initial re-establishment)	Aerial application proposed FY19
Artillery Firing Points	If current area does not meet current Army standard	None projected	Annual	TBD
Construction	Required if the proposed location is currently forested	None projected	Annual mowing of associated cantonment area	None projected
Range Complex Fuel Loading	None projected	Annual	Annual (bush hog vegetation along firebreaks)	None projected