Integrated Natural Resources Management Plan

FY 2022 - 2027

Fort Benning, Georgia

Directorate of Public Works Environmental Management Division
Fort Benning, Georgia

March 2022

Page Intentionally Blank

Integrated Natural Resources Management Plan

Fort Benning, Georgia

Approval

This Integrated Natural Resources Management Plan meets the requirements of the Sikes Act (16 United States Code 670a *et. seq.*) as amended. The plan has been prepared in accordance with the procedures of the Department of Defense and the U.S. Army in cooperation with the U.S. Fish and Wildlife Service, Georgia Department of Natural Resources, and Alabama Department of Conservation and Natural Resources. The signatures below indicate mutual agreement of the parties concerning the conservation, protection, and management of all natural resources presented in this Plan.

RIVERAESPADA.ALEXIS.1187047907 Digitally signed by RIVERAESPADA.ALEXIS.1187047907 Date: 2021.12.21 12:22:36 -05'00'

Signature & Date

Alexis Rivera Espada
Colonel, U.S. Army
Garrison Commander
Fort Benning, Georgia

PETER MAHOLLAND Digitally signed by PETER MAHOLLAND Date: 2022.01.06 14:09:18 -05'00'

Signature & Date

Peter Maholland
Deputy Field Supervisor,
Georgia Ecological Service
U.S. Fish and Wildlife Service

Ted Will Digitally signed by Ted Will Date: 2022.03.03 16:31:35 -05'00'

Signature & Date

Ted Will
Director, Wildlife Resources Div.
Georgia Department of Natural Resources

Charles F. Sykes Digitally signed by Charles F. Sykes Date: 2022.03.28 11:25:39 -05'00'

Signature & Date

Charles F. “Chuck” Sykes
Director, Division of Wildlife and Freshwater Fisheries
Alabama Department of Conservation and Natural Resources

Page Intentionally Blank

Table of Contents

A. Management Overview 1
1. Purpose & Scope 1
2. Management Philosophy 1
3. Mission & Natural Resource Management History 2
4. Goals, Objectives, & Targets 3
5. Review, Revision, & Reporting 5
B. Installation Overview 6
1. Maps 6
2. General Installation Information 11
3. Regional Land Use & Setting 12
4. Natural Environment 12
5. Installation History 13
   a. Pre-Military Land Use 13
   b. Installation Military History 13
6. Current Military Missions 15
7. Public & Affiliates Access 16
C. Integration Overview 17
1. Authorities & Responsibilities 17
2. External Stakeholders 18
3. Internal Integration 19
D. Program Elements 22
1. Geospatial Information Systems 22
2. Conservation Law Enforcement 22
3. Climate Change 22
4. Soils, Erosion, & Sedimentation 24
5. Geology 26
6. Water Resources 27
   a. Water Resource Guidance & Watershed Protection 27
   b. Wetlands 29
   c. Floodplains 32
7. Sensitive Species 35
   a. Federally Protected & Army Species at Risk 36

b. State Protected Species 45
8. Migratory Birds 46
a. Migratory Bird Conservation Programs 46
b. Bird Monitoring & Nesting Programs 46
c. Migratory Bird Protection 46
d. Bald & Golden Eagle Protection Act 47
9. Fish & Wildlife 47
a. Recreation 48
b. Fisheries Management 52
c. Game Management 52
d. Non-Game Management 55
10. Vegetation 55
a. Flora & Habitat 56
b. Forest Management 56
c. Wildland Fire Management 60
d. Grounds Maintenance 61
e. Agricultural Leases 61
11. Integrated Pest Management 62
12. Noxious Weeds & Invasive Species 63
13. Wildlife Aircraft Strike Hazard 64
14. Compatible Use Buffering & Conservation Easements 65
a. ACUB Plan Goal 65
b. Prioritization 66
c. Progress & Future of the ACUB Program 67
E. The Sustainable Range Program 68
1. Range & Training Land Program 68
2. Integrated Training Area Management Program 68
3. Project Approval, Environmental Coordination, & Compliance Procedures 72
4. Summation of ITAM Workplan Activities & Objectives 73
F. Implementation 76
1. Environmental Awareness 76
2. Natural Resource Staff & Training 77
3. Funding 77
G. Annual Management Plan 79

Appendix A: Acronyms & References 81
A.1: Acronyms 81
A.2: References Cited 84
Appendix B: Species Management Component (List) 87
Appendix C: Associated Plans (List) 88

A. MANAGEMENT OVERVIEW

1. Purpose & Scope

The Sikes Act (16 United States Code [U.S.C.] 670a) requires the Secretary of Defense to provide for the conservation and rehabilitation of natural resources on military installations. These efforts are facilitated through the preparation and implementation of an Integrated Natural Resources Management Plan (INRMP) and specific for every U.S. installation containing significant natural resources. The Department of Defense (DoD) policy recognizes the primary purpose of installation lands, waters, airspace, and coastal resources is to support mission-related activities and natural resources conservation programs shall work to guarantee continued access for realistic military training and testing and sustainment of the long-term ecological integrity per the Department of Defense Manual (DoDM) 4715.03.

In accordance with the aforementioned regulations, this Integrated Natural Resources Management Plan (INRMP), or hereinafter referred to as the Plan, guides natural resource management programs and conservation actions on Fort Benning and Camp Merrill, Georgia. The INRMP serves as the Garrison Commander's comprehensive plan and guiding document for managing and maintaining natural resources. Its implementation ensures that conservation measures and military activities are integrated with Federal stewardship requirements whereas optimizing mission essential activities on training land and conducting other/secondary activities (e.g. recreation, etc.) as compatible.

As a sub-installation of Fort Benning, Camp Merrill, Dahlonega, Georgia, has been included in Fort Benning's INRMP. Nevertheless, the Army's administrative authority and natural resource management responsibilities occur only within the developed 282 acre cantonment area. Therefore, sections of this INRMP incorporate Camp Merrill as applicable to its management of natural resources by Fort Benning.

2. Management Philosophy

To ensure that Fort Benning can meet its mission needs now and in the future, the natural resources must be managed so that they are ecologically sustainable. Fort Benning's natural resources management philosophy is an ecosystem based approach. Ecosystem management principles and guidelines as articulated in the 1994 DoD memorandum, "Implementation of Ecosystem Management in the Department of Defense", represented a major shift in DoD's focus from the protection of individual species to a more holistic management of ecosystems. This philosophy is furthermore embodied in the Installation's Natural Resources Management Vision and Mission Statements.

Fort Benning's Natural Resources Management Vision: Support the Maneuver Center of Excellence (MCoE) mission while promoting the ecological integrity of the Fort Benning landscape.

Fort Benning's Natural Resources Management Mission: Through a collaborative effort between natural resource professionals and military personnel, Fort Benning will strive to promote the long-term ecological sustainability of its lands for multiple-use opportunities. Fort Benning will apply sound land management practices and adaptive management strategies that conserve ecological integrity through the restoration, maintenance, and preservation of natural biotic communities and otherwise promote the health of Installation ecosystems through rehabilitation and maintenance. This ecosystem management approach will encompass stakeholder interests, regulatory requirements, and fiscal constraints.

3. Mission & Natural Resource Management History

Fort Benning

Early twentieth-century agricultural practices of converting forests to agriculture, then degrading the land and often abandoning it, portrayed significant ecological "gaps" common throughout the Southeast. Loss of native groundcover, fire-adapted flora and fauna, and late-successional habitat conditions created land that nobody wanted and represented critical shortfalls to the sustainment of the region's native ecology. The establishment of Camp Benning in 1918 and Fort Benning in 1922 as the Army's Infantry School, removed many of these land-development pressures across the sparsely populated landscape and reintroduced a new source of fire incidental to military training. It also provided an unintended but critical refuge for flora and fauna that otherwise may have been lost.

Regional forest management practices for much of the twentieth-century favored loblolly pine over longleaf, removed fire from the landscape, and created high stand densities and/or pine-hardwood mixtures that collectively limited recovery of native habitat conditions. Establishment of loblolly pine plantations was standard practice following clearcut harvests. Non-native species were sometimes established for reforestation, soil stabilization, or wildlife food plots. Fire prevention was emphasized more than broader fire management practices in the late twentieth century. Flora and fauna associated with frequent fire, open mid-stories and undisturbed ground cover often survived by chance rather than through intentional management programs.

From the late 1990s to present day, Fort Benning's forest management approach has continued to shift from a timber production and fish-and-game management focus to a more holistic ecosystem management perspective, which also promotes and enhances the land's ability to support and sustain Fort Benning's respective "missionscape." Missionscapes are the Army practice of balancing natural resources, vegetation management, and training requirements. Their effectiveness are essential for quality training areas and management of natural resources. The presence of natural vegetation enables authentic training scenarios involving cover, concealment, or line-of-sight firing constraints while promoting hallmarks of Fort Benning's natural resources management efforts (i.e. recovery of the Federally endangered red-cockaded woodpecker [RCW], restoration of longleaf pine habitat, and forest ecosystem management through an aggressive prescribed burn program). The INRMP builds on those important remnants of natural diversity that are present at Fort Benning and

provides an ecosystem-based management strategy for restoring or rehabilitating the native biota and ecological processes characteristic of the geographic area. The Goals and Objectives for Fort Benning Natural Resource Management are included in Table A.1.

Camp Merrill
In 1911, the U.S. Forest Service (USFS) purchased 31,000 acres in North Georgia which later became known as the Chattahoochee National Forest. Similar to Fort Benning's early origins, acquisition consisted primarily of abandoned farm land and old homesteads. Forest managers began immediate restoration of the land by planting trees, controlling erosion and wildfires, and reintroducing wildlife. Land management efforts of the USFS, in the early days, focused primarily on timber production and protecting water supplies. With the passing of the 1960 Multiple-Use Sustained-Yield Act, the USFS broadened its management objectives to include outdoor recreation, grazing, timber, watersheds, fish, and wildlife. To achieve these objectives, management efforts by the USFS diversified to include ecological restoration and protection, research and product development, fire hazard reduction, and the general maintenance of healthy forests (U.S. Department of Agriculture [USDA] 2021)

In 1951, the Army began utilizing portions of the Chattahoochee National Forest for training purposes under a Memorandum of Understanding (MOU) and a Special Use Permit. The developed 282 acre cantonment area, named Camp Frank D. Merrill, was managed under both the Army and USFS until acquired by the Army in a 2015 land exchange agreement. Camp Merrill is under the purview of Fort Benning; however, its Commander is by and large responsible for daily operations and management, including management of natural resources. Since Camp Merrill abuts USFS property and Soldiers utilize the Chattahoochee National Forest for training, coordination with USFS routinely occurs between Fort Benning, Camp Merrill, and USFS representatives.

4. Goals, Objectives, & Targets

Table A.1: Goals, Objectives, & Targets

Goal	Objectives	INRMP Section	Targets	Indicators of Target Effectiveness
No net loss in the capability of military installation lands to support the military of the Installation.	No reduction of training lands	Sections A-F	Maximize training flexibility	All military units meeting training objectives
Establishment of specific natural resource management goals and objectives and time frames for proposed action.	Proactive Natural Resources Management	Sections A, D, F	Promote and maintain native flora and fauna	Progression toward desired future conditions
Integration of, and consistency among, the various activities conducted under the plan.	Effective implementation of INRMP	Section C	Internal and external stakeholders	Successful coordination and transparency

Goal	Objectives	INRMP Section	Targets	Indicators of Target Effectiveness
Provide for short- and long-term land and forest management.	Sustainable training environment	Section D10	Ranges, training, and cantonment areas	Maintaining ecosystem integrity
Provide for fish and wildlife habitat enhancement or modification.	Maximize habitat diversity	Section D9	Undeveloped lands	Diverse and healthy populations
Prevent, reduce, and mitigate erosion and sedimentation.	Compliance with Federal and state regulations and Biological Opinions containing erosion control measures	Section D4	Ranges, training, and cantonment areas	Reduction of soil migration and preservation of water quality standards
Wetland protection, enhancement, and restoration where necessary.	Maintain wetland and riparian areas	Section D6	Wetland and riparian areas	No net loss (including using wetland credit banks)
Public access to the military Installation that is necessary or appropriate subject to requirements necessary to ensure safety and military security.	Uphold security and safety standards	Section D9	Installation users	Minimization of threats
Enforcement of applicable conservation laws and regulations.	Meet all Federal, state, and Installation Regulations	Section D2	Installation users	Ensure effective compliance
Review of the INRMP's operation and effectiveness on an annual basis.	Perform Environmental Performance Assessment System (EPAS) update annually	Section A5	INRMP and associated operational plans (Appendices)	Applicability to current management strategies
Manage Federal and state listed species and habitat for preservation and recovery.	Provide sustainable habitat within Installation	Section D7 & Appendix B	State and Federally listed species	No net loss of listed species
Provide a benefit to the species for which critical habitat is proposed.	Provide sustainable habitat within Installation	Section D7 & Appendix B	List species with critical habitat designation	No net loss of critical habitat for listed species
Avoid and minimize physical and regulatory encroachment through coordination with community and use of ACUB (Army Compatible Use Buffer) and similar opportunities.	Proactive Natural Resources Management	Section D14	State and Federally listed species	No net loss of listed species

5. Review, Revision, & Reporting

In keeping with an adaptive management approach and iterative management method (i.e. Plan-Do-Check) of managing natural resources, this INRMP is intended to be updated on a frequent basis to incorporate changes in environmental resources, management practices, regulatory requirements, or scientific research and advancements (Table A.2). Based on Department of Defense Instruction (DoDI) 4715.03, the INRMP is required to be reviewed for operation and effect no less than every five years (DoD 2011). The review process determines as to whether the plan needs minor changes or revisions in order to continue to address adequately the purposes and requirements of the Sikes Act. Fort Benning utilizes cross-functional teams for review, updates, and revisions. Each revised version of the INRMP must be approved by Headquarters, Installation Management Command (IMCOM) before implementation. The appendices (B and C) furthermore contain species specific management components detailing the management of those species, hereafter referred to as Species Management Components (SMC), for all Federally protected species (or proposed for listing), and/or critical habitat occurring on-Post. Fort Benning has consulted with the U.S. Fish and Wildlife Service (USFWS) and coordinated with state agencies as appropriate and will consult with the USFWS for substantive changes to those SMCs before implementation.

The Environmental Performance Assessment System (EPAS) is an Army program executed by Army Environmental Command (USAEC) by to assess both the Environmental Management System (EMS) and compliance aspects of a garrison's Directorate of Public Works (DPW) Environmental Management Division (EMD). In accordance with DoDI 4715.03, EPAS provides internal (installation personnel) self-assessments of conservation programs annually and external (designated DoD representative from outside the Installation) assessments at least once every three years.

Table A.2: Self-Assessment

Plan	Do	Check	Act
INRMP	Annual review	Internal/external revisions and updates	Revisions as necessary
Forest Inventory	Annual review	Internal revisions and updates	Revisions as necessary
Wetland Delineation	Compliance	Internal/external revisions and updates	Revisions as necessary
Range Inspections	Per Training Iteration	Inspection after use	Corrective actions
EPAS, RCW Annual Report, Gopher Tortoise Annual Report	Compliance	Annual inspections	Corrective actions

B. INSTALLATION OVERVIEW

1. Maps

The Fort Benning military Installation is divided into northern, central and southern training areas. Although a majority of the Installation is located in Georgia, the southern training area extends across the Chattahoochee River into Alabama. Cantonment areas are within the central and southern training areas (Figure 1). There are no leased areas or state and Federal lands near Fort Benning that are used for training.

Constraints
In general, land constraints occur with the potential for conflicting land uses. Identified constraints on Fort Benning, as illustrated in Figure 2, include those that pertain to the natural environment and others that are elements of the range/training landscape.

Related to the natural environment, all of Uchee Creek within the Installation has been designated critical habitat for the Federally endangered shiny-rayed pocketbook mussel (*Lampsilis subangulata*) (Section D7a). Similarly, wetlands on Fort Benning that are considered “Waters of the United States” (WOUS) entail the Chattahoochee River and associated streams/tributaries; including Upatoi Creek. Pertinent Clean Water Act (CWA) laws/regulations apply and are enforced through the Alabama Department of Environmental Management (ADEM) Georgia Environmental Protection Division (EPD) of the Georgia Department of Natural Resources (DNR) in addition to the U.S. Army Corps of Engineers (USACE).

As part of the range/training landscape, impact areas are designated areas or boundaries within which ordnances impact and contain the effects of the weapons. Impact areas containing ordnances that produce duds (e.g. unexploded ordnances [UXO], munitions and explosives of concern [MEC], etc.) are known as dudded impact areas. Fort Benning’s dudded impact areas are located in the northern, central, and southern training areas and generally off-limits to all personnel. Conversely, non-dudded impact areas contain ordnances that do not produce dud areas (e.g. surface danger zone [SDZ] fans often associated with small arms ranges). Non-dudded impact areas are used by both military and civilian personnel but may be temporarily off-limits, a constraint, depending on the training being conducted.

The Explosive Ordnance Disposal range is located in the central training area and off-limits to unauthorized personnel. Radiological Contaminated Areas (RCA) and UXO areas located in the northern and southern training areas are also generally off-limits to all personnel. Training ranges located in all three training areas are used for military training but may be accessed by military and civilian personnel as needed upon Range Division approval.

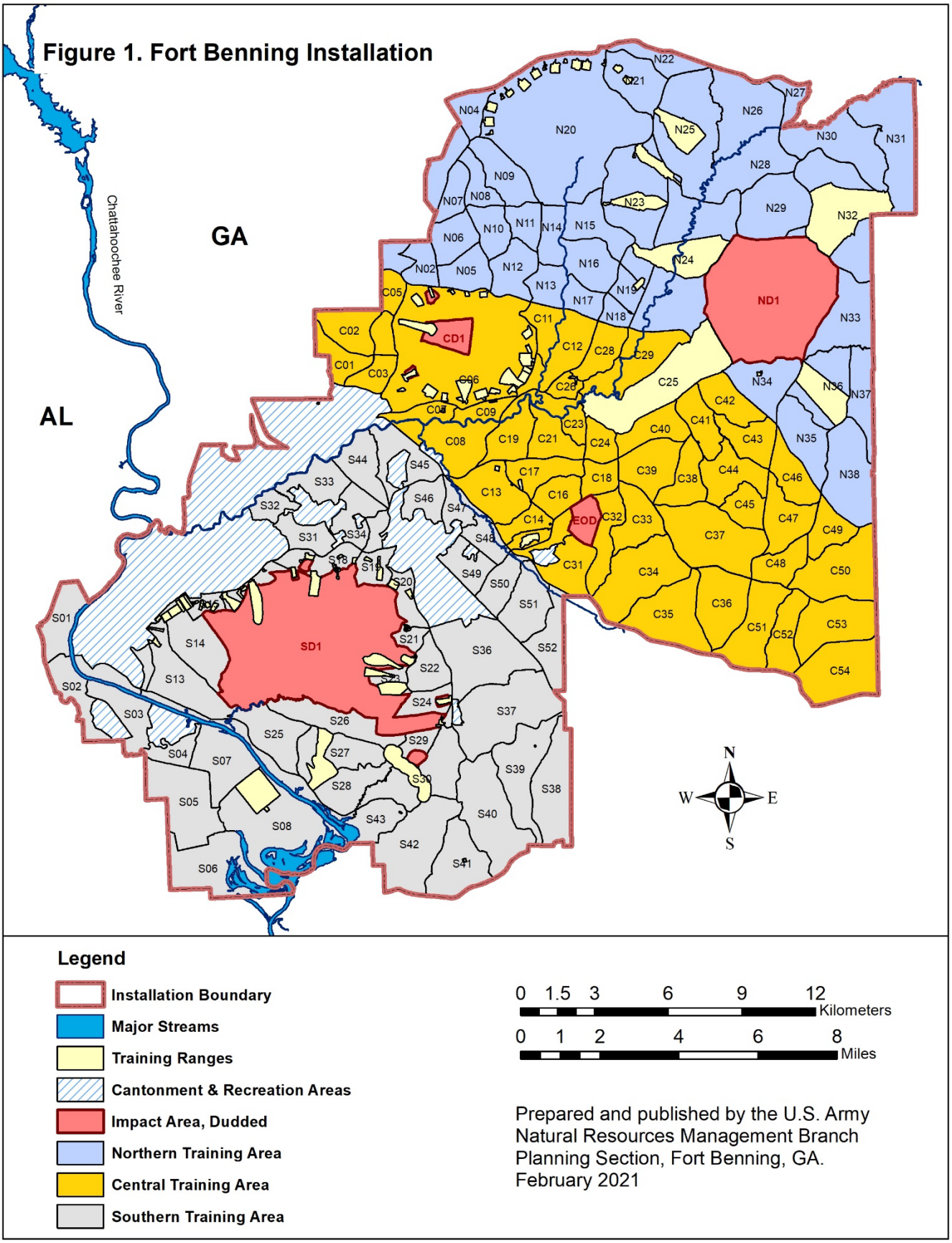
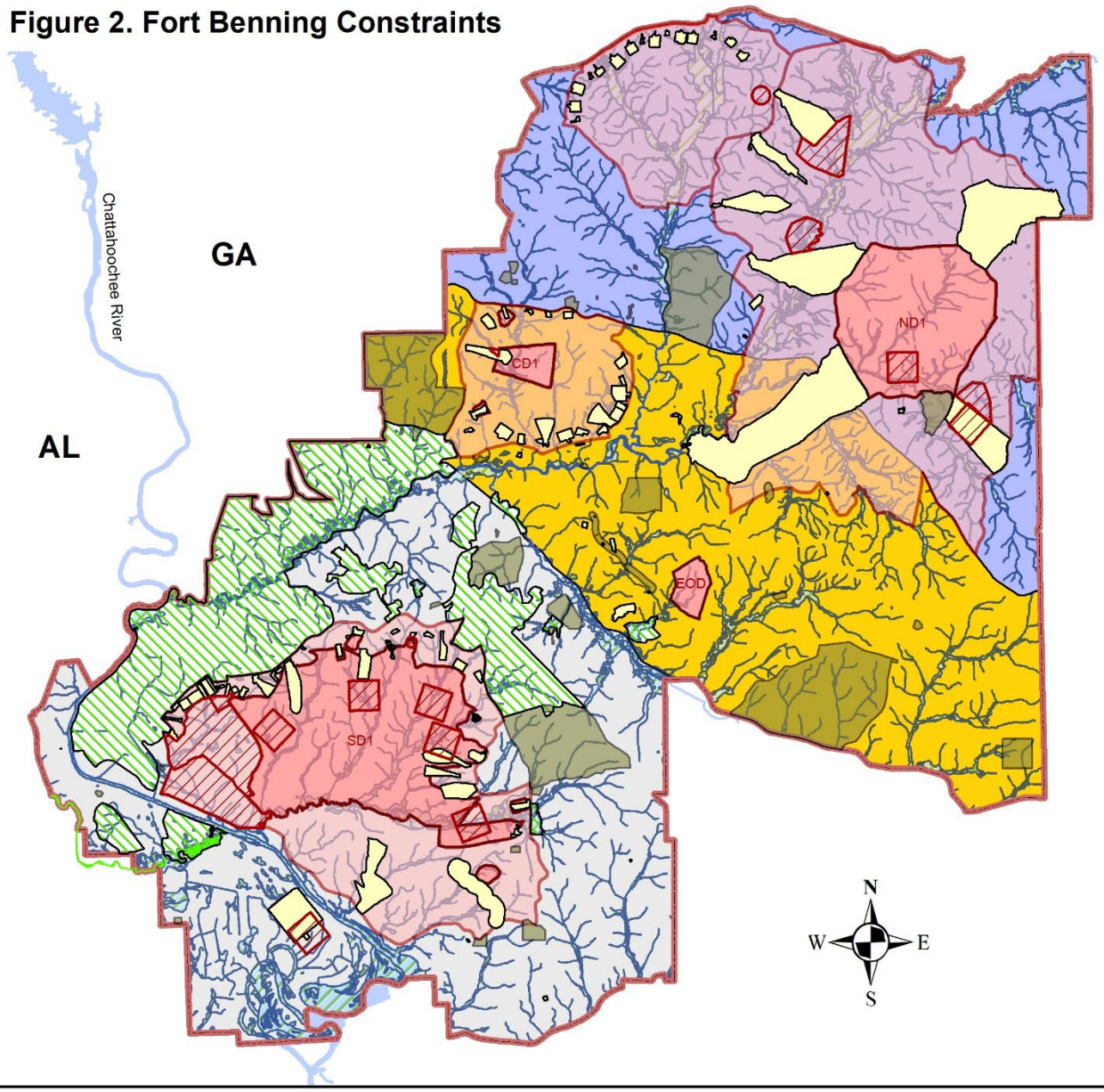


Figure 1. Fort Benning Installation
GA
AL
Chattahoochee River
N
W
E
S
Legend
Installation Boundary
Major Streams
Training Ranges
Cantonment & Recreation Areas
Impact Area, Dudded
Northern Training Area
Central Training Area
Southern Training Area
0 1.5 3 6 9 12
Kilometers
0 1 2 4 6 8
Miles
Prepared and published by the U.S. Army
Natural Resources Management Branch
Planning Section, Fort Benning, GA.
February 2021

Figure 2. Fort Benning Constraints



Legend

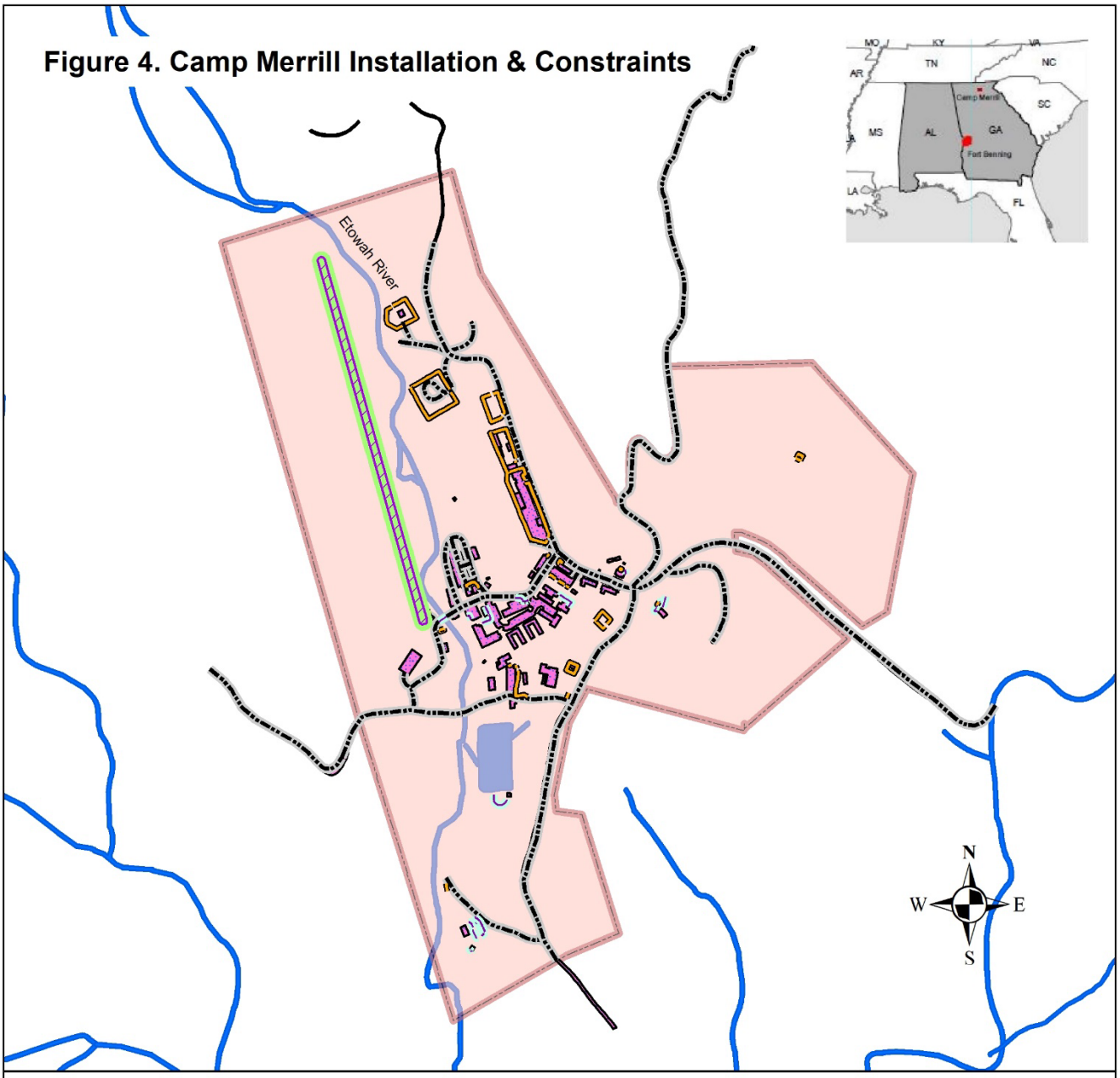
- Training Ranges (Military Training Only)
- Training Sites
- Restricted Area (No Entry: UXO-RCA)
- Cantonment & Recreation Areas
- Impact Area, Dudded
- Impact Area, Non-Dudded
- Critical Habitat
- Fort Benning Wetlands
- Major Streams
- Northern Training Area Region
- Central Training Area Region
- Southern Training Area Region
- Installation Boundary

0 1.75 3.5 7 10.5 Kilometers

0 1 2 4 6 Miles

Prepared and published by the U.S. Army
Natural Resources Management Branch
Planning Section, Fort Benning, GA
March 2021

Figure 4. Camp Merrill Installation & Constraints



Legend

- Airfield
- Recreation (Running Track)
- Fence
- Wall
- Road Centerline
- Buildings, Parking, Pavement
- Installation Boundary
- Wetlands

0 0.125 0.25 0.5 0.75 Kilometers

0 0.075 0.15 0.3 0.45 Miles

Prepared and published by the U.S. Army
Natural Resources Management Branch
Planning Section, Fort Benning, GA
March 2021

Camp Merrill
Camp Frank D. Merrill (Headquarters, 5th Ranger Training Battalion) is located in the foothills of the Blue Ridge Mountains in Lumpkin County near Dahlonega, Georgia (Figure 4). The Etowah River, running north to south through the cantonment area, divides development from open and predominantly undeveloped space. The Army conducts the Mountain Phase of Ranger School within Camp Merrill in addition to the neighboring Chattahoochee National Forest. Training in the national forest is made possible through a service agreement with the USFS.

Constraints within Camp Merrill involve the Federally endangered Etowah darter and its critical habitat; the Etowah River (Figure 4). These areas are protected from disturbances (e.g. training or construction) that may adversely affect the associated species. CWA laws/regulations apply and are enforced through the Georgia EPD of the Georgia DNR in addition to the USACE.

Region
The U.S. Census Bureau defines the Columbus, Georgia Metropolitan Area as six Georgia counties (i.e. Chattahoochee, Harris, Marion, Muscogee, Stewart, and Talbot), one county in Alabama (i.e. Russell), and the city of Columbus; the region's central anchor (see Figure 3). The region is locally known as the Chattahoochee Valley and predominantly defined geographically by Chattahoochee River. The largest population center is the City of Columbus, which has more than 195,700 residents with 321,000 in the Chattahoochee Valley according to the 2019 estimates from the U.S. Census Bureau. This makes Columbus the third largest city in terms of population and the fourth-largest metropolitan area in Georgia. Columbus has maximized most of the development potential along the Installation's western boundary; therefore, further growth and potential for encroachment tends to be concentrated on the north and northeast sides of the city towards the suburban communities of Fortson, Midland, and Upatoi, Georgia.

Phenix City, Alabama, the next largest incorporated city in the region, is located nine miles northwest and across the Chattahoochee River from the Main Post area of Fort Benning. The town of Cusseta, Georgia, the county seat of Chattahoochee County, is a small, incorporated city located south of Fort Benning (Figure 3). The remainder of the region is characterized by a few small, unincorporated communities and rural residences and predominantly agricultural and undeveloped vacant land used for farming and forestry. Other major urban areas within a 100 mile radius of Fort Benning include Albany and Macon, Georgia, and Auburn, Opelika, Montgomery, and Dothan, Alabama. Unlike the threats of encroachment from adjacent Columbus, the encroachment potential by communities south of Fort Benning remains relatively minor at present.

Another aspect of the region and tool utilized in management of natural resources includes the Army Compatible Use Buffer (ACUB). As discussed in further detail in Section D14 and Appendix C2, the ACUB program allows Fort Benning to work with partners to protect habitat and buffer training without acquiring any new land for Army

ownership. ACUB lands buffer areas around Fort Benning to limit the effects of encroachment and maximize training land inside the Installation. Areas targeted for ACUB, known as Priority Areas (PA), are hierarchized based on the potential for incompatible development. As illustrated in Figure 3, parcels identified within PA1 serve to buffer the east/northeastern portion of the Installation from municipal encroachment and may provide future sites for Federally listed and/or candidate species found on Fort Benning. Approximately 34,000 acres are currently protected in PA1. Fort Benning's PA2 does not presently have any parcels identified to serve as an encroachment buffer or as sites for translocating Federally listed and/or candidate species due to anticipated encroachment issues remaining relatively minor.

Camp Merrill
Camp Frank D. Merrill is located in the northern end of Lumpkin County, Georgia within the Blue Ridge Wildlife Management Area of the Chattahoochee National Forest. The county seat is the city of Dahlonega, which had an estimated population of 6,884 residents according to 2018 estimates from the U.S. Census Bureau. Surrounded by the Chattahoochee National Forest, the encroachment potential on Camp Merrill is negligible.

2. General Installation Information

Fort Benning is an Army Installation of approximately 182,000 acres Fort Benning covers portions of Muscogee, Chattahoochee, and Marion counties in Georgia and Russell County, Alabama. Approximately 169,260 acres of Fort Benning are located in Muscogee and Chattahoochee Counties, Georgia, and approximately 12,740 acres are located in Russell County, Alabama (Fort Benning 2020). Approximately 80 percent of Chattahoochee County is within the boundaries of Fort Benning.

More than 120,000 active-duty military, family members, reserve component Soldiers, retirees and civilian employees support the Installation on a daily basis (Fort Benning 2020). Fort Benning plays a significant role in supporting the Army's mission and is an invaluable military readiness training platform by developing the capabilities of the maneuver force and individual Soldier. Approximately 131,000 acres are primarily designated for training and maneuver areas (Van Allen, A. 2020). Fort Benning's range infrastructure is heavily utilized with several unique ranges supporting Special Operations Command units. Fort Benning has a total of 77 live-fire and 14 non-live-fire ranges in service with the SDZ acreage of over 72,000 acres. Overall, units training on Fort Benning conduct an average of 125 daily training missions (Van Allen, A 2020).

Lands that are not used for operational training at Fort Benning are used to support cantonment functions. The cantonment areas at Fort Benning have been developed into a wide variety of land uses that comprise the elements necessary for a complete urban-style community. There are four cantonment areas within the Installation boundaries: Main Post, Sand Hill, Kelley Hill and Harmony Church.

Camp Merrill
Camp Merrill is the home of the 5th Ranger Training Battalion and the Mountain Phase of the U.S. Army Ranger School which is designed to enhance the Soldiers' ability to plan and execute small unit combat missions in mountainous terrain. This phase covers mountaineering, small unit tactics, patrol infiltration, raids, ambushes, and other skills required for close combat and direct fire missions. The Army trains within the camp's 282 acre cantonment area in addition to the neighboring Chattahoochee National Forest. Cantonment facilities and infrastructure includes barracks, motor pool, gymnasium, company offices, dining facility, commissary, Post Exchange and Class VI Store, Mosby Landing Strip and surrounding running track. Within the camp's footprint, two privately held parcels of land include the Mount Zion Church and a small family cemetery.

3. Regional Land Use & Setting

The land use adjacent to Fort Benning includes low-density residential, public, industrial and open space; primarily used for agriculture and timber production. The closest urban center to Fort Benning is Columbus, Georgia, northwest of the Main Post and Phenix City; located within Russell County Alabama west of Columbus across the Chattahoochee River. Talbot, Harris, and Muscogee counties (to the north), Marion County (to the east), Russell County, Alabama (to the west) and Webster and Stewart counties (to the south) have primarily agricultural, forested (timbered), or vacant land, with low density residential, commercial, and public use spread through several small communities.

Camp Merrill
The land adjacent to Camp Merrill includes the Chattahoochee National Forest. Due to its predominantly rural setting, agriculture and agri-tourism (e.g. farmer's markets, garden visits, vineyard tours, etc.) are the dominant industries of the county. Dahlonega, Georgia is the closest urban center 20 miles southwest of Camp Merrill.

4. Natural Environment

Most of Fort Benning is located south of the Fall Line, which is defined by the overlap of Coastal Plain strata on top of Piedmont rocks. This is also the area where the Piedmont basement rocks are first exposed in streams flowing to the Atlantic Ocean and the Gulf of Mexico (Gulf South Research Corporation 1999). Along the Fall Line Sandhills, crystalline rocks of the Piedmont are overlaid by marine or fluvial sediments. The crystalline and sedimentary deposits may be exposed in relatively close proximity. For this reason, Fort Benning contains a varied topography. Upland slopes range from steep to gently sloping and comprise most of the land on the Installation.

The area's climate is characterized by hot long summers and short winters. Precipitation is evenly distributed throughout the year, the wettest month being March with approximately six inches of precipitation, and the driest month being October with approximately three inches of precipitation. January, historically the coldest month, has an average regional low temperature of 32 degrees Fahrenheit (°F). In July, historically

the warmest month, temperatures often reach above 90 °F and can fluctuate by cooling 20 °F from day to evening (U.S. Climate Data 2020).

Camp Merrill
Camp Merrill is located in the North Georgia Mountains, north of the Fall Line within the Piedmont plateau. The Piedmont is the remnant of mountain chains that long ago eroded and characterized the region with rolling hills and drainage basins formed from sediments of the surrounding higher ground. Camp Merrill is located within the Upper Etowah River basin which provides a relatively broad basin unique to the surrounding steep topography and narrow basins that characterize the area.

The area's climate is characterized by warm summers and cold winters. Precipitation is evenly distributed throughout the year, the wettest month being January with approximately seven inches of precipitation, and the driest months being June and October with approximately four inches of precipitation. January, historically the coldest month, has an average regional low temperature of 26 degrees °F. In July, historically the warmest month, temperatures reach above 85 °F (U.S. Climate Data 2020).

5. Installation History

a. Pre-Military Land Use

Before its use as a military installation, the lands that constitute Fort Benning today were used in several capacities. At different times in history, American Indian villages and European settler farms, mills, and cotton plantations once occupied the current site. As a result, the landscape has been influenced by previous inhabitants through such activities as agriculture, timber harvest, use of fire (or lack thereof), and impoundment of water for mill operations. As historical land use has affected the ecological condition of Fort Benning's natural resources today, a review of the historical record also provides an indication of the cultural and historical importance of Fort Benning lands. Detailed discussion of the cultural and land use history of the area can be found in Fort Benning's Integrated Cultural Resources Management Plan (ICRMP).

Camp Merrill
Before the Chattahoochee National Forests was acquired by the USFS, the land and region was greatly shaped and influenced by Native American villages, European settler farms, mills, and plantations. Much of the land consisted of degraded and/or abandoned land, old villages and homesteads (U.S. Department of Agriculture [USDA] 2021). It was not until 1936 that the USFS reorganized national forest land and re-named the 1911 purchase the Chattahoochee National Forest.

b. Installation Military History

On 18 September 1918, the Adjutant General of the Infantry School directed that the Infantry School of Arms with all its personnel, property, and equipment move from Fort Sill, Oklahoma, to Columbus, Georgia, beginning 1 October 1918. The first troops arrived on 6 October 1918 and occupied a temporary camp three miles east of town on

Macon Road. The next day the camp was officially opened. At the request of the Columbus Rotary Club, the camp was named in honor of a Civil War General, Henry Lewis Benning, a Columbus native and the area's most prominent military officer.

The search for a permanent location for the camp led to a plantation site south of Columbus owned by Mr. Arthur Bussey. The Bussey land featured terrain considered ideal for training Infantrymen. Once purchased by the government, the plantation would serve as the core of the camp, and the large frame house, known as Riverside, would serve as quarters for a long line of commanders. In February of 1920, the War Department officially assigned the title of “Infantry School” to Camp Benning. Two years later, Camp Benning was designated a permanent military Installation and named Fort Benning. From the 1920’s through 1940’s, the Installation increased in size through a number of land purchases throughout the surrounding areas in Georgia and Alabama, with a final land exchange with the City of Columbus occurring in 2001.

After years of struggling for appropriations and attention from Army policy makers, Fort Benning enjoyed a construction boom in the mid-1930s as a result of Federal work projects during the Great Depression, and continued into the 1940s with the eruption of World War II in Europe. Troop strength swelled with the arrival of the 1st Infantry Division and the establishment of the Officer Candidate School and Airborne training. Ranger training began at Fort Benning in the 1950s, and the 1960’s saw the formation of the 11th Air Assault Division to test air assault concepts. By 1978, all U.S. Infantry Soldiers were trained at Fort Benning as part of One Station Unit Training.

In November 2005, the Army announced its intent to implement the Base Realignment and Closure (BRAC) 2005 recommendation at Fort Benning, Georgia. Under this recommendation, the Armor Center and School would relocate from Fort Knox, Kentucky to Fort Benning and eventually consolidate with the Infantry Center and School to form the MCoE for maneuver forces training. This BRAC recommendation also resulted in the construction and operation of numerous new ranges, training facilities, and infrastructure upgrades to support the relocation of the Armor School and associated training requirements. In September of 2011, the relocation of the Armor School to Fort Benning was complete.

Known as the Army’s Maneuver Center of Excellence, Fort Benning is the home of the Armor School, the Infantry School, the Western Hemisphere Institute for Security Cooperation (formerly known as the School of the Americas), 1st Security Force Assistance Brigade, elements of the 75th Ranger Regiment (United States), Army Marksmanship Unit, and a variety of other tenant units. Fort Benning’s currently military mission is summarized in Table B.1.

Camp Merrill

During World War II and Korea, the concept of Ranger training evolved in an effort to develop leaders and enhance the performance of all Army infantry units. In 1950, the Army began sending individual companies with a full complement of officers and NCOs through the new six-week Ranger Course at Fort Benning, Georgia. By 1951, a study

was initiated to propose a new and improved Ranger Course. This course would be offered to all combat units of the Army to establish sufficient numbers so each infantry unit the size of a platoon will have at least one Ranger qualified Soldier. In January of 1953, Ranger training took place in the North Georgia Mountains following coordination between the USFS and Army officers familiar with the rugged and sparsely populated Blue Ridge Wildlife Management Area. The first Mountain Phase consisted of combat patrol operations and mobility training near Woody Gap, Georgia; approximately 13 miles northeast of present day Camp Merrill.

In 1952, the Mountain Phase moved to a new permanent site at Camp Wahsega; four miles south of present day Camp Merrill. Additionally, Mosby Army Airfield was built at this time for Army aircraft support of Camp Wahsega. This construction and need for other support facilities eventually lead to the present day establishment of Camp Merrill near the Etowah River. In 1971, the Ranger Camp was officially designated in honor of Brigadier General Frank D. Merrill as home of the 5th Ranger Training Battalion and the Mountain Phase of Ranger School.

6. Current Military Missions

Table B.1: Fort Benning Mission

Major Installation Users	Mission Description	Garrison Resources Utilized
Army Armor School	Train Armor and Cavalry leaders and Soldiers in the operation, tactics, and maintenance of armor forces and equipment.	Cantonment, maneuver lands, heavy ordinance/large and small arms ranges
Army Infantry School	Develop disciplined infantrymen in the operation and tactics involving small arms, anti-armor or indirect fire weapons, land reconnaissance, field navigation, communications, and other equipment for combat.	Cantonment, maneuver lands, small arms ranges
Western Hemisphere Institute for Security Cooperation	Provide professional education and training for civilian, military and law enforcement students from nations throughout the Western Hemisphere.	Cantonment, maneuver lands, small arms ranges
75th Ranger Regiment	Plan and conduct special missions in support of U.S. policy and objectives.	Cantonment, maneuver lands, heavy ordinance/large and small arms ranges
1st Security Force Assistance Brigade	Deploy in support of a Combatant Commander, integrates with foreign partner forces, assists and advises local security operations to build partner security capacity and capability and achieve regional security in support of U.S. National Interests.	Cantonment, maneuver lands, heavy ordinance/large and small arms ranges

Major Installation Users	Mission Description	Garrison Resources Utilized
Task Force 1-28	Support Infantry Brigade Combat Teams when additional combat power is required.	Cantonment, maneuver lands, heavy ordinance/large and small arms ranges
Army Marksmanship Unit	Compete to win national and international shooting competitions, supports Army accessions, and advances small arms lethality to demonstrate Army marksmanship capability, enhance recruiting and increase marksmanship effectiveness in combat.	Cantonment and small arms ranges
5th Ranger Training Battalion (Camp Merrill)	Conduct the Mountain Phase of Ranger School.	Cantonment

7. Public & Affiliates Access

Fort Benning and Camp Merrill are closed military installations. Anyone attempting entry without a Federal government-issued identification card (Military ID, Military Dependent ID, Common Access Card or Automated Installation Entry Card) or visitor's pass will be subject to a background check before unescorted entry. Access for recreational activities (e.g. hunting, fishing, etc.) and other land uses (e.g. collecting firewood, bird watching, etc.) are discussed in Section D9.

Fort Benning and Camp Merrill provides the public access to cultural resources that are not sensitive in nature provided that they meet the security requirements for access to the installations and there are no conflicts with mission, personal safety, tribal concerns, or the stated goals of the Cultural Resources Program. Cantonment area historic buildings can be seen on scheduled tours or by coordinating a visit. Historic cemeteries are accessible to family members for visits and genealogical research when there is not a conflict with the training mission.

Fort Benning and Camp Merrill also authorizes access to Federally-recognized Tribes, in compliance with the American Indian Religious Freedom Act of 1978 (AIRFA), which affirms the right of Native Americans to have access to their sacred places, and EO 13007 (Indian Sacred Sites), which requires agencies accommodate access to and ceremonial use of Indian sacred sites and avoid adversely affecting the physical integrity of sacred sites. In addition to access to sacred sites, burial sites, and other archaeological sites, Fort Benning’s consultations with the Tribes have revealed that certain plant types at Fort Benning are centrally important to the Tribes, and it is Fort Benning’s policy to provide them with access and support to obtain these. Access to historic properties, the collection of natural resources, and other similar activities by Federally-recognized Tribes and/or other group visits requires coordination through Environmental Management and Range Divisions.

C. INTEGRATION OVERVIEW

1. Authorities & Responsibilities

Table C.1 lists laws, regulations, and executive orders which guide natural resource management on Fort Benning and Camp Merrill. This is not an all-inclusive list but rather represents the documents that drive and direct natural resource management on the Installations.

Table C.1: Natural Resource Management Requirements & Guidance

Law, Regulation, or MOU #	Law / Regulation	Responsible / Administering Agency(s)
DoD Financial Management Regulation 7000.14-R, Vol. 11A, Ch.16	Accounting for Production and Sale of Forest Products, August 2002.	DoD
7 U.S.C.§ 426-426b	Animal Damage Control Act	USDA
16 U.S.C. 4701-4751	Aquatic Nuisance Prevention and Control	Department of Defense, state DNR, & international partners (as applicable)
16 U.S.C. §§668-668d	Bald & Golden Eagle Protection Act	U.S. Fish & Wildlife Service
42 U.S.C. § 7401-7642	Clean Air Act	Environmental Protection Agency, States
33 U.S.C. §1251 et. seq.	Clean Water Act	Environmental Protection Agency, States, USACE-Regulatory
40 C.F.R. Parts 1500-1508	Council on Environmental Quality (CEQ) Regulations-CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA)	All Federal Agencies (As Applicable)
42 U.S.C. §9601-9675	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	Environmental Protection Agency
DoDI 4715.03	Conservation Program for Natural Resources, March 18, 2011	DoD
DoDI 5525.17	Conservation Law Enforcement Program (CLEP), October 17, 2013	DoD
DoDI 6055.06	DoD Fire and Emergency Services Program, December 21, 2006	DoD
DoD 5400.7-R	DoD Freedom of Information Act Program, September 4, 1998	DoD
16 U.S.C. §1531-1543	Endangered Species Act of 1973, as amended	U.S. Fish & Wildlife Service
32 C.F.R. § 989	Environmental Impact Analysis	DoD
16 U.S.C § 3901-3932	Emergency Wetlands Resources Act of 1986	Secretary of the Interior
7 U.S.C. §136 et. seq.	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended	Environmental Protection Agency

Law, Regulation, or MOU #	Law / Regulation	Responsible / Administering Agency(s)
43 U.S.C. §1701	Federal Land Policy and Management Act of 1976	DoD
7 U.S.C. § 2801	Federal Noxious Weed Act of 1974	Secretary of Agriculture
33 U.S.C. § 1251-1376	Federal Water Pollution Control Act of 1977 (Clean Water Act), as amended	Environmental Protection Agency, States
16 U.S.C. §2901-2911	Fish and Wildlife Conservation Act of 1980	U.S. Fish & Wildlife Service
Executive Order 11988	Floodplain Management, May 24, 1977	DoD
10 U.S.C. §2671	Hunting, Fishing and Trapping on Military Lands	DoD
Executive Order 13112	Invasive Species, February 3, 1999	DoD, state DNR, & other Federal agencies (as applicable)
16 U.S.C. §703 et. seq.	Migratory Bird Treaty Act, as amended	U.S. Fish & Wildlife Service
P.L. 107-314, Sec. 315	National Defense Authorization Act for Fiscal Year 2003: Incidental Taking of Migratory Birds during Military Readiness Activities	DoD
P.L. 108-136, Sec. 318	National Defense Authorization Act for Fiscal Year 2004: Military Readiness & Conservation of Protected Species	DoD
Public Law 91-190, 42 U.S.C. §4321-4347	NEPA of 1969, as amended	DoD
32 C.F.R. 190	Natural Resource Management Program for the DoD	DoD
16 U.S.C. §460l	Outdoor Recreation on Federal Lands	DoD
Public Law 106-224, 7 U.S.C. §7702	Plant Protection Act	U.S. Department of Agriculture
Executive Order 11990	Protection of Wetlands, May 24, 1977	DoD ,U.S. Fish & Wildlife Service, & USACE
Executive Order 12962	Recreational Fisheries, June 7, 1995	DoD & state DNR
16 U.S.C. §670a-f	Sikes Act	U.S. Fish & Wildlife Service, state DNR
Sikes Act Tripartite MOU	Cooperative Integrated Natural Resource Management Program on Military Lands	DoD, U.S. Fish & Wildlife Service, & Association of Fish & Wildlife Agencies
16 U.S.C. §2001	Soil and Water Conservation Act	Secretary of Agriculture
10 U.S.C. §2665	Timber Sales on Military Lands	DoD
Army Regulation 200-1	Environmental Protection and Enhancement	Department of Army

2. External Stakeholders

Fort Benning has a long-standing program of outreach to stakeholders with interest in or affected by the Installation's activities, as well as governmental regulatory agencies that have jurisdiction to issue approvals, authorizations, or permits for Installation projects.

Outlined in Table C.2, stakeholders include Federal, state, and local governmental agencies with regulatory authority over Fort Benning (e.g. USFWS and Georgia EPD); Federally recognized Native American Tribes (Tribes) associated with the Fort Benning area; intergovernmental partnerships; and special interest groups with a charter involving environmental or military matters.

Faced with lean budgets and increasing operating costs, the National Defense Authorization Act of 2013 and 2015 authorized and encouraged installations to maximize resources through partnerships with local, state, and Federal communities and agencies. Partnerships include a variety of agreements from formal Intergovernmental Support Agreements (IGSA) to Memorandum of Agreements/Understanding (MOA/MOU). Partnerships may formalize an agreement with no funds or resources of value being exchanged or share an installation-support service with a state or local government, where the State or local government already provides the service for its own residents. Money saved and efficiencies gained allow the installation to focus on other priority requirements. As listed in Table C.2, Fort Benning currently has three IGSAs and Camp Merrill has one MOU.

Table C.2: Stakeholders

External Stakeholder	Type
Alabama Department of Conservation and Natural Resources	Governmental Regulatory Agency
Auburn University	IGSA Partnership (Ecological Forest Monitoring)
Fort Benning Native American Tribes	Federally-recognized Native American Tribes
Georgia Department of Natural Resources	Governmental Regulatory Agency
Georgia Ecological Service USFWS	Governmental Regulatory Agency
Georgia Forestry Commission	IGSA Partnership (Wildfire Detection)
The Nature Conservancy	Cooperative Agreement Partner (ACUB)
Public Stakeholders	Public Citizens
USDA, Animal and Plant Health Inspection Service (APHIS)	IGSA Partnership (Feral Swine Control)
*USFS, Blue Ridge Ranger District	IGSA Partnership (Training Land Coordination)
*Camp Merrill	

3. Internal Integration

Internal integration of the INRMP across Fort Benning and Camp Merrill begins with Fort Benning's 144R Process (FB-144R). The purpose of the National Environmental Policy Act (NEPA) Program at Fort Benning is to assist the Installation, Camp Merrill, and other facilities under the support responsibility of Fort Benning to comply with the NEPA. Accordingly, the DPW EMD staff screen and provide applicable comments (i.e. guidance, mitigation, restrictions, etc.) on all potential Installation level actions prior to implementation through the FB-144R to insure NEPA analysis is conducted. The FB-144R form for submission of proposed actions can be accessed and submitted online at https://applications/nepa/. Permission to proceed or denial of a proposed action is

returned to the proponent with applicable guidance as a Record of Environmental Consideration (REC) or notification that a higher level of NEPA analysis (i.e. Environmental Assessment [EA] or Environmental Impact Statement [EIS]) is required.

Table C.3 summarizes the Installation's major plans and offices responsible for their integration. Similarly, Table C.4 provides an overview of Fort Benning Directorates and coordinating positions responsible for frequent coordination to ensure mission success.

Table C.3: Installation Plans & Responsibilities

Responsible Directorate	Installation Plan (Date of Approval)	Location/Link
Directorate of Plans, Training, Mobilization & Security (DPTMS)	Conservation Law Enforcement Plan (2017)	Appendix C4
DPW	EAs/EISs	Online Library: https://www.benning.army.mil/Garrison/DPW/EMD/Legal.html
DPW	SMCs (2019)	Appendix B
DPW	Erosion and Sediment Control Component (2019)	Fort Benning DPW, Building 6
DPW	Installation Master Plan/Area Development Plans (2017-2019)	Fort Benning DPW, Building 6
DPW	Cultural Resources Management (2020)	Fort Benning DPW, Building 6
DPW	Integrated Pest Management Plan (2018)	Appendix C1, Online Library: https://www.benning.army.mil/Garrison/DPW/EMD/Legal.html
DPTMS	Integrated Training Area Management Work Plan (2020)	Fort Benning DPTMS, Building 5512
DPW	Integrated Wildland Fire Management Plan (2021)	Appendix C6
DPTMS	Range Complex Master Plan (2020)	Fort Benning DPTMS, Building 5512
DPW	Wildlife Aircraft Strike Hazard (WASH) Plan (2016)	Appendix C4

Table C.4: Coordinating Offices

Responsible Directorate	Personnel Position Title(s)	Communication Methods	Contact Frequency
DPTMS	Range Officer	Email/Phone	Daily
DPTMS	Scheduler	Email/Phone	Daily
DPTMS	Range Planner	Email/Phone	Daily
DPW	Master Planning	Email/Phone	Weekly
DPW	EMD Chief	Email/Phone	Daily
Directorate of Emergency Services (DES)	Fire Chief	Email/Phone	Daily
DES	Conservation Law Enforcement Officer (CLEO)	Email/Phone	Daily
Directorate of Family and Morale, Welfare & Recreation (DFMWR)	Recreation Officer	Email/Phone	Weekly
Staff Judge Advocate (SJA)	Environmental Attorney	Email/Phone	Monthly

D. PROGRAM ELEMENTS

1. Geospatial Information Systems

Natural resources related geospatial data (i.e. natural resources geospatial data) is managed by the NRMB. Geospatial data is used in numerous planning and compliance matters, including project planning, NEPA studies, and regulator consultation (e.g., Endangered Species Act [ESA] Section 7 consultation with the USFWS). The Fort Benning DPW Installation Geospatial Information & Services (IGI&S) Program can access the natural resources geospatial data (e.g. forest stand, flora and fauna) stored on a common network drive and migrate it to the target geodatabase that meets Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) V-4.0. This data migration is conducted using a SDSFIE specific ArcGIS Toolbox. In general, geospatial data may be updated as needed or quarterly. The IGI&S Program Manager must submit quarterly reports to Headquarters, Department of the Army (HQDA) which may include updated natural resources geospatial data. The reported/updated geospatial data is aggregated into the HQDA geospatial data repository. Data contained within the HQDA geospatial data repository may be visualized in the Army Installation Atlas (formerly known as Army Mapper).

2. Conservation Law Enforcement

Fort Benning's Conservation Law Enforcement Program is responsible for Security and Game and Fish compliance in all training areas on Fort Benning. The Conservation Law Enforcement Officers (CLEO) will work with the NRMB personnel on a regular basis to ensure that all Federal, state, and installation laws and regulations which pertain to natural resources are being upheld. The primary regulations that guide Conservation Law Enforcement on the Installation include; Fort Benning (FB) Regulations 190-11, 200-1, 210-4, 210-5, and 190-5. For a better understanding of the Conservation Law Enforcement duties and responsibilities as it pertains to enforcement of the Installation's conservation programs and Migratory Bird Treaty Act (MBTA), see Appendix C3 (Directorate of Emergency Services Standing Operating Procedures, Section I, Patrol Operations).

3. Climate Change

The effects of the change in climate on DoD installations may have the potential to impact the military mission. Therefore, natural resources management objectives and activities described in this INRMP are designed with consideration for the interrelationships between the individual components of the ecosystem, the requirements of the military mission, and other land use activities. The focus is on maintaining the structure, diversity, and integrity of the biological communities and recognizing that the Soldiers and military mission are a vital component of the ecosystem.

Strengthening climate resilience of Army installations is important to maintaining mission readiness in the face of climate-related disruptions. In compliance with

Installation Energy Management Instruction (DoDI 4170.11), Fort Benning coordinates with its private management partners, Flint Energies and Columbus Water Works, to manage electrical and water/wastewater systems for security, safe, reliability, and efficiency. Ongoing efforts to strengthen grid resilience, maximize energy, and water conservation efforts include the replacement of aging infrastructure, installation of additional system monitoring and automation devices, on-site generation (existing solar array) and plans for future grid tie-ins and battery storage. Additionally, during drought or extreme temperature conditions; Fort Benning's Public Affairs Office (PAO) utilizes a combination of public-service messaging (i.e. website notices and articles, social media, etc.) to announce and encourage simple water and energy conservation measures. Water and energy conservation measures commonly include, but are not limited to, Post-wide restrictions on washing privately owned vehicles and irrigating lawns or reminders to turn off lights and minimize other electrical use.

To address climate change and risks involved, the DoD implemented a policy for installations to address climate considerations not only within NEPA studies, but also within the INRMP. As described in Table D.1, potential climate change threats identified under the Army Climate Assessment Tool pertaining to Fort Benning and Camp Merrill include wildfire, drought, riverine flooding, heat, energy demand, historical extreme conditions, and land degradation. Natural resources management components monitor, evaluate, develop program adaptations, and mitigations as necessary to offset potential effects of climate change through natural resource management actions. This approach provides a planned versus reactive approach to climate change.

The Fort Benning natural resources management goal is to maintain or restore the native, open longleaf pine forest ecosystem on upland sites. The open nature of the fire maintained longleaf pine ecosystem mitigates many of the expected challenges that climate change presents to this region. Serving as a keystone of the ecosystem, the pine's robust tap-root characteristics enable its wind and drought resistance and resilience in the warm southeastern forested landscape. The leaf litter of the pine also easily supports low intensity, high return interval fires that produce open, overstory canopies with limited to no mid-story and richly diverse herbaceous layers. This species-diverse forest promotes habitats of threatened species while improving natural water movement to ground water aquifers, further offsetting the threats of climate change to the region.

Table D.1: Fort Benning Climate Change Threats

Threat	Mitigatable Management Actions	INRMP Management Reference
Wildfire	Prescribed Fire, Training/Range Incendiary Restrictions	Section D
Drought	Longleaf Pine Management, Water Conservation Measures	Section D
Riverine Flooding	Use of USACE Lock System	NA
Heat	Forest Canopy Management	Section D
Energy Demand	Forest Canopy Management, Energy Conservation Measures	Section D

Threat	Mitigatable Management Actions	INRMP Management Reference
Historical Extreme Conditions	Longleaf Pine Management	Section D
Land Degradation	Longleaf Pine Management	Section D

4. Soils, Erosion, & Sedimentation

There are two basic soil provinces on Fort Benning: the Georgia Sand Hills Major Land Resource Area and the Southern Coastal Plains Major Land Resource Area. The Georgia Sand Hills is a narrow belt of deep sandy soils with rolling to hilly topography. These soils are primarily derived from marine sands, loams, and clays. South of the Sand Hills are the Southern Coastal Plain soils, which are divided into nearly level to rolling valleys and gently sloping to steep uplands. Southern Coastal Plain soils in this area have a loamy or sandy surface layer and loamy or clay subsoil. Narrow to moderately wide nearly level flood plains are common throughout the area. Nearly level soils on alluvial plains are along the Chattahoochee River, Upatoi Creek and other tributaries.

Based on the available soil survey data, most of Fort Benning's soils are identified as highly erodible. The degree of erodibility is determined by drainage, texture, permeability, structure and percent slope. Soils having a high silt content are the most erodible of all soils. They are easily detached and they tend to crust and produce large amounts and rates of sedimentation.

Fort Benning’s goal is to maintain compliance with all applicable state and Federal laws and Biological Opinions that have erosion control requirements and water quality standards such as maintaining compliance with the Georgia Erosion and Sedimentation Act of 1975. The overall objective is to reduce and mitigate erosion and sedimentation on Fort Benning. This is accomplished by rehabilitating eroded areas constructed by the base operations contractor. Every effort will be made to use native plant species when establishing permanent vegetation on the sites. Annuals are used for initial stabilization. The Soil Conservation Program (SCP) has influenced hundreds of soil erosion projects over thousands of acres within Fort Benning, with a goal of preventing, controlling, and rehabilitating eroded areas. Fort Benning’s highly erodible soils are prone to gully and ravine formation, some approaching up to 40 feet in depth. Severe erosion can prevent or impede vehicles maneuvering across the Installation and present safety hazards to personnel if left unchecked. Accordingly, the NRMB conducts emergency soil erosion repairs or stabilization as required.

All soil conservation practices are constructed in accordance with the *Manual for Erosion and Sediment Control in Georgia*. Prepared by the Georgia Soil and Water Conservation Commission (GSWCC), the purpose of this manual is to improve and protect Georgia's soil and water. The SCP also adheres to the following policy and guidance documents: the Georgia Erosion and Sedimentation Act of 1975, Georgia Water Quality Control Act, Alabama Water Pollution Control Act, and the National Pollution Discharge Elimination System (NPDES).

The Georgia Erosion and Sedimentation Act of 1975 regulates land-disturbing activity, which is defined as "any activity which may result in soil erosion from water or wind and the movement of sediments into state water or onto lands within the state, including, but not limited to, clearing, dredging, grading, excavating, transporting, and filling of land". Applicants for land disturbing permits must demonstrate that they have Erosion and Sedimentation Control Plans (ESPCP) that meet NPDES best management practices (BMPs) for the particular application.

In Georgia, construction projects that disturb one acre of land or greater require a State-approved ESPCP, fee submittal for disturbed acreage, and an NOI to meet the requirements of the Federal NPDES construction permit program and Georgia Erosion and Sedimentation Control Act. The ESPCP prescribes activities to limit erosion and sedimentation from the site during construction (including construction during maintenance activities). The ESPCP includes a site description list of NPDES BMPs to be used, BMP inspection procedures to be performed by qualified personnel procedures for timely BMP maintenance, requirements for sampling of discharges or receiving streams for turbidity, and reporting requirements to the Georgia Department of Natural Resources.

Typically, erosion from military training is a result of maneuver training. The Integrated Training Area Management (ITAM) Program has primary responsibility for monitoring, reporting, and rehabilitating erosion resulting from military training. The NRMB works collaboratively with ITAM to address erosion issues in RCW habitat. In addition to training, construction activities have the potential to cause soil erosion and sedimentation. Fort Benning and its contractors must comply with the CWA and NPDES regulations for construction activities involving land disturbances. Land disturbances and soil erosion will be monitored to ensure compliance with applicable regulations.

The methods of soil conservation include land smoothing, mulching and constructing rock dams, rock channels, sediment basins, berms, diversions and terraces. Also included are the installation of silt fence and erosion control blankets. Temporary and permanent grasses are planted on all disturbed areas.

Camp Merrill
Camp Merrill lies in the Tallapoosa-Muscella Soil Association. The soils are moderately deep, well-drained to excessively drained, gently sloping to steep, cobblestone soils on irregular ridgetops, foothills, and low mountains. This association is on irregular narrow ridge tops that are dissected by numerous drainage ways in a dendritic pattern. The slopes generally range from 6 to 12 percent, but some hillsides are as steep as 70 percent. The dominant soils in this association are the cobblestone Tallapoosa soils, which make up about 60 percent of the total acreage, and Muse11a soils, which make up about 22 percent. On most of the soils in this association, there has been little or no erosion. The soils are difficult to work because they contain cobblestones and are shallow or steep. Only small pockets of the area are in cultivated crops or pasture. The rest of the association is wooded or idle. Most of the previously cropped and pastured areas have been reforested mainly to Virginia and shortleaf pines. The major soils on the ridgetops are moderately well suited to use for

dwellings, highways, and recreation areas, such as campsites. The steeper areas obviously have severe limitations for construction of military facilities or roadways.

5. Geology

The sedimentary sequences of the Coastal Plain that overlie the crystalline basement rocks at Fort Benning consist of materials deposited during the Cretaceous, Tertiary, and Quaternary Periods. The Cretaceous Period sediments form the uplands and consist of the Ripley, Cusseta Sand, Blufftown, Eutaw, and Tuscaloosa geologic formations.

Geological formations of the Fort Benning date to the Upper Cretaceous and recent epochs. The recent alluvium and undifferentiated terrace deposits occur along the Chattahoochee River and Upatoi and Oswichee Creeks. These alluvia are immature soils comprised of lenses of sand, silt, and clay. The Sand Hills area is just below the "fall line," which marks the boundary between the older crystalline rocks in the Piedmont and the younger, unconsolidated sediments of the Coastal Plain. Deep Cretaceous sands deposited in this ancient shoreline area were reworked during periods of submergence of the Coastal Plain in Quarternary Period. The uplands (sand hills) are made up of Cretaceous deposits.

In general, the Cretaceous materials decrease in age as one moves seaward from the Fall Line. From youngest to oldest, the Cretaceous deposits are the Cusseta, Blufftown, Eutaw, and Tuscaloosa. The Cusseta sand deposits occur only in the extreme southern and southeastern portions of the Installation. These deposits consist of relatively fine, loose yellowish sand with some clay underlain by coarse, cross-bedded, loose yellowish sand with pebbles (Cooke 1943). Blufftown deposits occur throughout much of the southwestern portion of the Installation. They include gray calcareous sand, micaceous black and gray clay, and calcareous rock layers, with coarse sand and sandstone at the lowest levels of the formation. These deposits are the parent material for the fine micaceous sand soils, which support relatively dense deciduous forests. The Eutaw formation is found across the southern and eastern one-third of Fort Benning. It consists of some 30 meters of clary sand and platy sandy clay overlying a gray or iron stained coarse sand. Soils derived from these deposits are well drained and support relatively open vegetation. The Tuscaloosa formation occurs across the northern two-thirds of the Installation and consists of firm, buff colored sand and clay. It is primarily cross-bedded and contains lenses of sandy clay. Near the margins of the Piedmont are found significant amounts of angular quartz pebbles, with grain size decreasing as one moves away from the Piedmont (Cooke 1943). Many of the well-drained to excessively well-drained soils are derived from the Tuscaloosa formation.

Camp Merrill
The Camp Merrill cantonment area lies within a geologically complex region. The rocks of the Blue Ridge province to the immediate north are complexly folded and metamorphosed Precambrian and Cambrian schists, gneisses, and amphibolites. The rocks of the Upper Piedmont are typically slates, schists, gneisses and igneous plutonics from intrusion. The Dahlonega Gold Belt lies approximately 10 miles to the

south. Rocks to the northwest of the Gold Belt include the Great Smoky Group and the Richard Russell Formation. Both of these units are composed of combinations of amphibolite, biotite-quartz schist, biotite-muscovite schist, and various metasediments. Borings and outcrops near the landfill site indicate a thick saprolitic overburden of silty to sandy clay, silty sand, and silt. The saprolite varies from 20 to 50 feet thick and is derived from parent rocks of biotite gneiss, amphibolite gneiss, and schist. Soil density becomes extremely high at depth. Outcrops of foliated biotite gneiss are present along Wahsega Road and the access road for the site. Outcrops of coarse-grained, garnet-muscovite schist are located slightly south near the Wards Creek crossing of Wahsega Road. The rocks of the area are generally massive and show limited jointing. A change from saprolite to weathered rock to fresh rock occurs over the entire area. Fracture frequency decreases with depth. (Camp Merrill 1996)

6. Water Resources

Water resources include surface waters, wetlands, floodplains, and groundwater. Stormwater that replenishes and sustains these resources is also an important component, as it has the potential to introduce contaminants and sediments to these systems. The use and conversion of water resources, such as filling of wetlands and construction in floodplains, affects their quantity and quality.

A watershed includes the land area where all surface water drains to a specific point. Fort Benning's Watershed Program implements Federal policies and Army regulations by managing water resources on or associated with the Installation. The program employs a watershed management approach to address the interrelated components of hydrologic systems, and to ensure Army's compliance with applicable laws and regulations (see Table D.2). The Army continually monitors, documents, and shares information with respect to water resources on Fort Benning.

a. Water Resource Guidance & Watershed Protection

Table D.2 identifies laws, regulations, and guidance applicable to water resources at Fort Benning, including notably the CWA.

Table D.2: Major Water Resources Guidance

Guidance	Description/Applicability to Proposed Acton
CWA of 1972 (33 U.S.C. §1251 *et seq.*)	Establishes the basic structure for regulating discharges of pollutants into WOUS and surface water quality standards. Key provisions of the Act include: Section 404 authorizes the USACE to regulate impacts to jurisdictional wetlands and streams. 404 (f)(1) authorizes permit exemptions for normal farming and silviculture activities. • Section 401 requires that applicants for a Federal permit or license for any activity that may result in discharge to a waterbody obtain State Water Quality Certification to ensure compliance with state water quality standards. Section 303(d) establishes water quality standards and requires states to maintain a list of "impaired waters" subject to total maximum

Guidance	Description/Applicability to Proposed Acton
	daily loads (TMDLs) (regulatory authority delegated to Georgia DNR-EPD). • Sections 402 and 319 mandates the NPDES program to regulate the discharge of point (end-of-pipe) and nonpoint (stormwater) sources of water pollution (regulatory authority delegated to Georgia DNR-EPD).
Army Regulation (AR) 200-1, Environmental Protection and Enhancement	Army environmental regulation that includes requirements related to the management of water resources.
Energy Independence and Security Act (EISA) of 2007 (42 U.S.C. §17094 et seq.)	EISA Section 438 requires Federal agencies to incorporate, to the maximum extent technically feasible, low-impact development (LID) measures to maintain the predevelopment hydrology of a site for projects involving 5,000 square feet or more of land disturbance. Additional guidance is provided in U.S. Environmental Protection Agency (USEPA) Technical Guidance on Implementing the Storm Water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act (USEPA, 2009). Applicable DoD technical criteria are provided in UFC 3-210-10, Change 1, Low Impact Development.
Executive Order 11988, Floodplain Management (May 24, 1977)	Directs Federal agencies to determine whether a proposed action would occur within a floodplain and to avoid floodplains, to the maximum extent possible, when there is a practicable alternative. Federal Emergency Management Agency (FEMA) issued guidelines for implementing this Executive Order, which includes an 8-step planning process (FEMA 2015).
Executive Order 11990, Protection of Wetlands (May 24, 1977)	Directs Federal agencies to minimize or avoid the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. This Executive Order adopts the FEMA-issued guidelines for Executive Order 11988.
Georgia Erosion and Sedimentation Act of 1975 (Official Code of Georgia Annotated 12-7-1)	State law requiring riparian buffers of 25 feet to be maintained during construction for all streams, and a buffer of 50 feet to be maintained during construction for primary and secondary trout streams. Land-disturbing activities therein require a stream buffer variance issued by the Georgia DNR-EPD. No trout streams are present on Fort Benning.
Alabama Department of Environmental Management Regulations 335-6-10 and 335-6-11	Designated uses For Uchee Creek and the Chattahoochee River are Public Water Supply, Fish and Wildlife and Swimming.

The major issue of concern for watershed protection is erosion and sedimentation, and in particular, management of sediment loads in streams. It is important to note that sedimentation has the ability to affect more than a water resource but entire hydrological areas. These often larger hydrological areas are described in the management of natural resources as Watershed Management Units (WMU). Some WMUs may be adversely impacted due to erosion and sedimentation from construction and military training activities. The NPDES requires implementation of effective erosion control BMPs to minimize the transport of sediment from a construction site to curtail potential adverse effects to water resources and watersheds.

b. Wetlands

Fort Benning has approximately 16,900 acres of potentially jurisdictional wetlands (Figure 5). Fort Benning wetlands include impounded water, flowing water, river floodplains, stream floodplains, small stream swamps, wooded seepage bogs, herbaceous and shrub seepage bogs and gum/oak ponds.

The purpose of the Wetlands Program is to adhere to Section 404 of the CWA by securing a Department of Army permit and provide compensatory wetland and stream mitigation for areas that are impacted by construction. The wetlands are primarily managed through the NEPA process and initiated on Fort Benning via a FB-144R submission. The Regulatory Division of the USACE Savannah District issues Department of the Army wetland permits. Generally speaking, coverage under a Nationwide Permit is possible if impacts are less than 0.5 acre of impact and less than 300 feet of stream impacts. A Regional Permit can cover up to three acres of impacts. Once the delineation and the Pre-Construction Notification have been submitted the USACE has 45 days to issue a Nationwide or Regional Permit. For larger impacts, an Individual Permit is required and the process can take six months or longer. The Georgia EPD issues Section 401 Water Quality Certifications. The 401 permit is included with Nationwide and Regional Permits but a separate 401 permit is required with an Individual Permit.

Project proponents are encouraged during the planning process to avoid wetland and stream impacts to the extent possible. Fort Benning works with USACE and wetland consultants to delineate wetlands and streams, assess impacts, and determine mitigation; usually by obtaining wetland bank credits. Jurisdictional wetlands are delineated based on characteristics of the hydric soil, wetland plants and hydrology. The delineation is valid for up to five years. Fort Benning commonly utilizes ArcGIS National Wetlands Inventory (NWI) data and other shapefiles from projects requiring delineated wetlands. Wetland impacts are assessed in acres and stream impacts are in linear feet. For planning and military training purposes, Fort Benning may use a 100 foot buffer for wetlands and 25 feet buffer for streams. Fort Benning typically mitigates the loss of wetlands and streams through the purchase of credits from local mitigation banks. Fort Benning uses a functional assessment procedure to calculate the number of wetland and stream credits required for compensatory mitigation. All data sheets and forms are sent to the USACE Regulatory Division for approval. Once the delineation and pre-construction notification are completed, they are forwarded to USACE office in Albany. The District has 45 days to respond with a Letter of Notification stating coverage under a Nationwide or Regional Permit for the project.

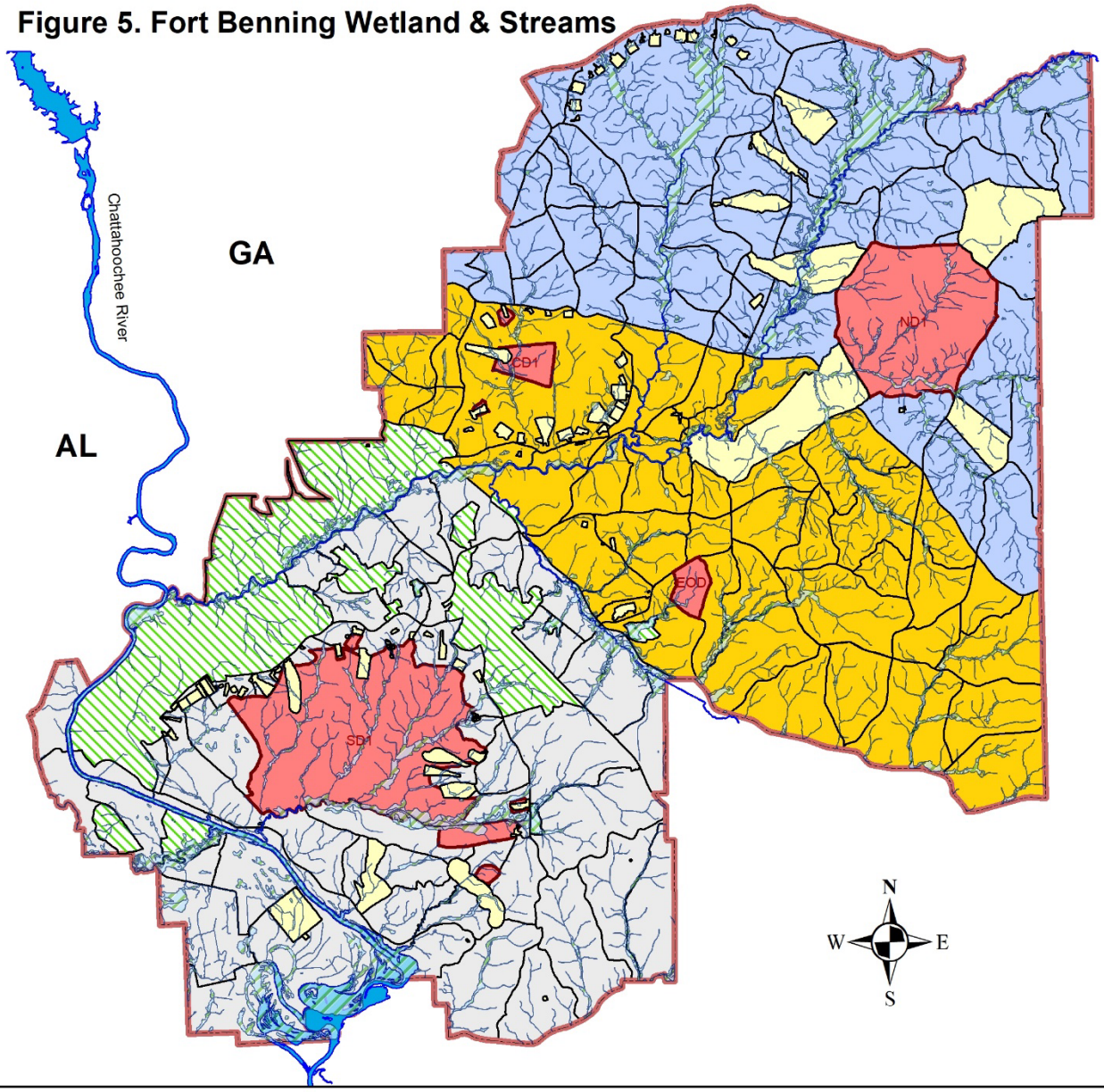
There are two off-Post mitigation banks that Fort Benning has used to mitigate losses. The Upatoi Creek Mitigation Bank is located to the north of the Installation and the Kolomoki Mitigation Bank is located to the south. Mitigation credits can be purchased through the Mission Installation Contracting Command or by an existing USACE contract. It is Army policy to purchase mitigation credits in areas that are of “like kind and quality” as those wetlands and streams being disturbed. Therefore, impacts to wetland and streams in the northern part of the Installation have been mitigated by

purchasing credits at the Upatoi Creek Mitigation Bank and for southern impacts, the Kolomoki Mitigation Bank was used. In the future, wetland and stream credits may be available on ACUB properties east of Fort Benning.

The Clear Creek Mitigation Site has 52 acres of wetland and 6,550 linear feet of stream, that was severely impacted by sedimentation from McKenna Drop Zone. After restoration of the site in 2008, Ft. Benning was awarded 206.6 wetland credits and 60,587.5 stream credits by the USACE. Half of these credits were used to offset wetland and stream impacts at the Digital Multi-Purpose Range Complex (DMPRC). Remaining credits have been used when a small number of credits are required for mitigation. Today 131.1 wetland credits and 53,020.2 stream credits are available (Hollon, G. 2020). As a condition of the DMPRC wetland permit, the site is “off limits” for tactical training. The Site was monitored for seven years after construction and is considered successful because it meets the success criteria set forth in the June 2004 Mitigation Plan. It is managed through the FB-144R process and is expected to retain its ecological function into perpetuity.

Camp Merrill
Although there are perennial streams within the area, no wetlands exist within Camp Merrill according to the NWI data. The most notable stream is the Etowah River. The Etowah is designated by Georgia DNR as a primary trout stream supporting self-sustaining populations of trout. These streams would be subject to Section 404 requirements under the Clean Water Act (Figure 4).

Figure 5. Fort Benning Wetland & Streams



Legend

- Wetlands
- Major Streams
- Training Ranges
- Cantonment & Recreation Areas
- Impact Area, Dudded
- Installation Boundary
- Northern Training Area
- Central Training Area
- Southern Training Area

0 2 4 8 12 Kilometers

0 1.25 2.5 5 7.5 Miles

Prepared and published by the U.S. Army
Natural Resources Management Branch
Planning Section, Fort Benning, GA
March 2021

c. Floodplains

Floodplains are areas of low, level ground present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation due to rain. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and provision of habitat for a diversity of plants and animals (Wright 2007). As illustrated in Figure 6, there are approximately 18,800 acres within the 100 year floodplain on Fort Benning (FEMA 2010). According to FEMA data, Camp Merrill does not contain any floodplains.

Floodplains provide numerous beneficial environmental functions such as flood abatement, stream flow mediation, filtering, and water quality transformation. They also create a variety of unique habitats for wildlife. Threats to the area and its wildlife include water pollution, water level manipulation, sedimentation, and disturbance of nesting migratory bird species. Degradation of wetland habitat would result in the loss of foraging areas for many species. Additionally, the floodplain areas provide abundant recreational opportunities to Installation personnel and the general public.

In Georgia, Streams on Fort Benning and Camp Merrill are protected under the Georgia Erosion and Sedimentation Act (Official Code of Georgia Annotated 12-7-1). Any proposed land disturbing activity within the 25 foot buffer area of any stream or within the 50 foot buffer of any trout stream would require a Georgia EPD stream buffer variance. Although Fort Benning does not contain any trout streams, Camp Merrill contains approximately 6,000 feet of the Etowah River; a primary trout stream. The Georgia provides variances to this requirement only under permits granted by the Georgia NPDES program. The variances are required for activities that disturb the riparian areas along the streams. Alabama has no requirements for stream buffers relating to construction activities; however, water quality is regulated through Alabama's NPDES program and certain areas have amended their local zoning ordinances to include stream buffers to further protect waterways.

A body of water is described as "impaired" if it fails to meet one or more water quality standards and not suitable for its designated use. Table D.3 summarizes the streams on Fort Benning that are considered impaired.

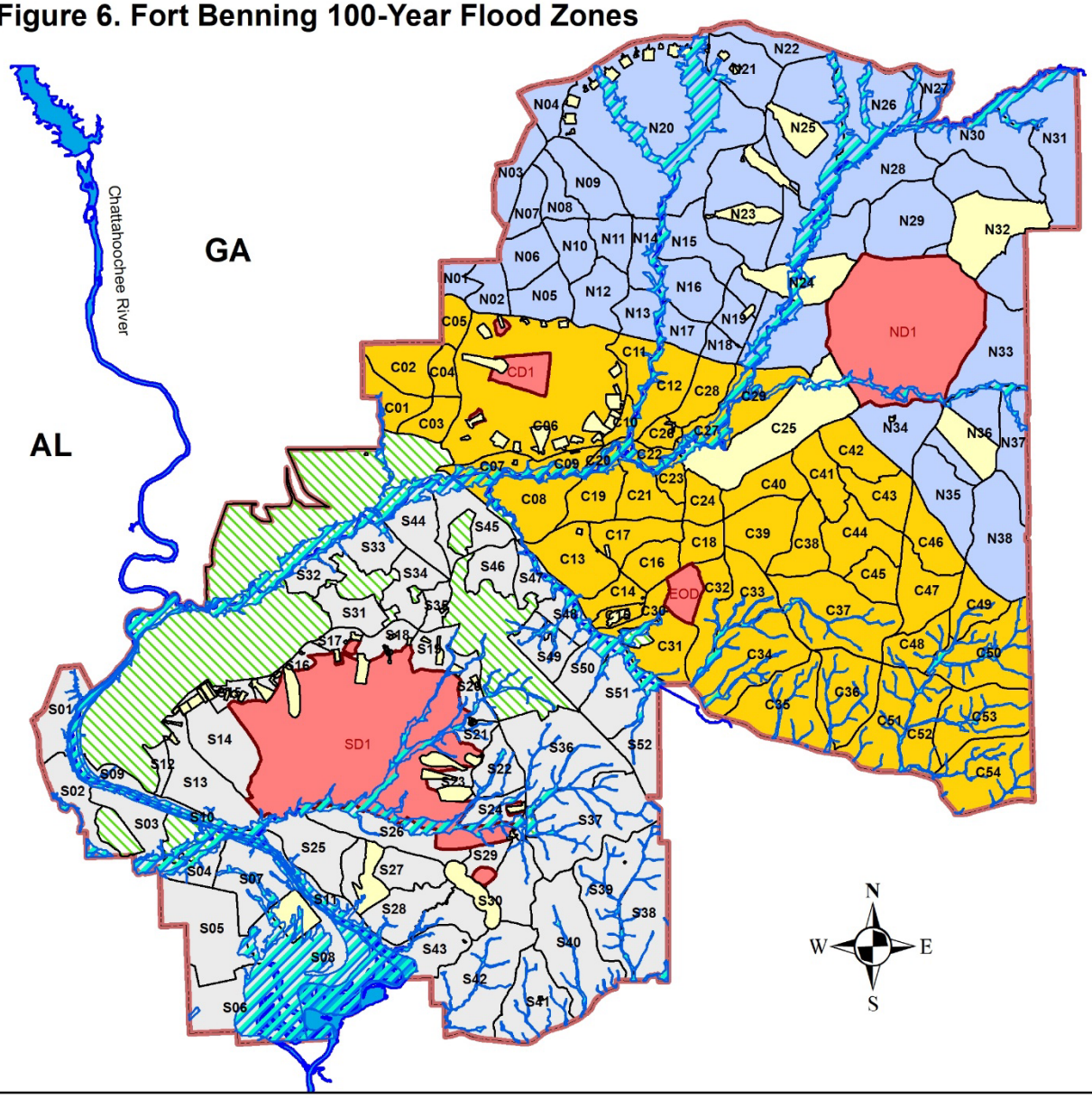
Table D.3: Impaired Streams of Fort Benning

Impaired Stream	Reason for Listing
Alabama	
Uchee Creek	Fecal Coliform, Mercury
Georgia	
Little Pine Knot	Biota Impacted - Fisheries
Pine Knot	Biota Impacted - Fisheries
Tiger Creek	Biota Impacted - Fisheries, Fecal Coliform
Upatoi Creek	Fecal Coliform

Executive Order 11988 requires all Federal agencies to provide leadership and take action to reduce the risk of flood loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values of floodplains when acquiring, managing, or disposing of Federal lands.

Through Fort Benning's NEPA Process, potential impacts to floodplains resulting from proposed training or other projects are analyzed via the FB-144R. This analysis often extends to conducting site specific floodplain delineations. For actions involving one acre of more of soil disturbance; a NPDES permit is required. To obtain the permit, an erosion control plan is required illustrating the erosion control BMPs to be employed to reduce sediment in floodplains. For both potential wetland and/or floodplain impacts that cannot be avoided, a Finding of No Practicable Alternative (FONPA) is required to determine if all means to avoid or minimize impacts to wetlands/floodplains have been considered. FONPA approval is prepared in conjunction with NEPA if applicable, and approved only at higher HQDA level.

Figure 6. Fort Benning 100-Year Flood Zones



Legend

- FEMA 100Yr Flood Zone
- Major Streams
- Training Ranges
- Cantonment & Recreation Areas
- Impact Area, Dudded
- Installation Boundary
- Northern Training Area
- Central Training Area
- Southern Training Area

0 2.25 4.5 9 13.5 Kilometers

0 1.25 2.5 5 7.5 Miles

Prepared and published by the U.S. Army
Natural Resources Management Branch
Planning Section, Fort Benning, GA
March 2021

7. Sensitive Species

Table D.4: Federally Protected and Army Species at Risk Known to Occur near Fort Benning & Camp Merrill

Scientific Name	Common Name	*Federal Status	Installation Presence	Existing USFWS Consultation	INRMP Section Discussion/SMC (Appendix)
Plants					
Amphianthus pusillus	Gratiola amphiantha	T	No	No	Section D7a
Arabis georgiana	Georgia rockcress	T	Yes	Yes	Section D7a, Appendix B2
Rhus michauxii	Michaux's sumac	E	No	No	Section D7a
Ptilimnium nodosum	Harperella	E	No	No	Section D7a
Silene polypetala	Fringed campion	E	No	No	Section D7a
Trillium reliquum	Relict trillium	E	Yes	Yes	Section D7a, Appendix B5
Stylisma pickeringii	Pickering's morning-glory	SAR	Yes	N/A	Section D7b
Birds					
*Dryobates (**Picoides) borealis*	RCW	E	Yes	Yes	Section D7a, Appendix B4
Haliaeetus leucocephalus	Bald eagle	BAGEPA protected	Yes	Yes	Section D7a, Appendix B1
Mycteria americana	Wood stork	T	Transient Species	Yes	Section D7a, Appendix B8
Reptiles					
Gopherus polyphemus	Gopher tortoise	C	Yes	N/A	Section D7a, Appendix B3
Heterodon simus	Southern hognose	SAR	Yes	N/A	Section D7a
Freshwater Mussels					
Alasmidonta triangulata	Southern elktoe	TBD	No	No	Section D7b, Appendix B7
Lampsilis subangulata	Shinyrayed pocketbook	E	No	Yes	Section D7a, Appendix B6
Pleurobema pyriforme	Oval pigtoe	E	No	No	Section D7a
Fish (Camp Merrill)					
Etheostoma etowahae	Etowah darter	E	No	No	Section D7a

*BAGEPA = Bald and Golden Eagle Protection Act, C = Candidate, E = Endangered, SAR = Species at Risk, T = Threatened, TBD = To be decided

**Picoides* is the former scientifically accepted genus name for this species and references to *Picoides borealis* still remains in Fort Benning's documentation.

a. Federally Protected & Army Species at Risk

i. Gratiola amphiantha *(Amphianthus pusillus*)

Gratiola amphiantha is Federally listed as threatened and is a very small, aquatic herb belonging to the Figwort family. Other common names for this species include little amphianthus, pool sprite, and snorklewort. The USFWS first listed it as a threatened species in 1988.

Habitat Requirements and Limiting Factors: Its typical habitat includes rock-rimmed temporary pools on weathered granite or gneissic outcrops. The outcrops can be large, isolated domes or gently rolling flat rocks. The pools are often referred to as vernal pools and are typically shallow, flat-bottomed, and have intact rims. The intact rims are an important feature in that they restrict drainage and allow the pools to hold water required by the species. Ideal conditions within the vernal pools include shallow mineral soils that are sandy-silty and very low in organic material and nutrients such as nitrogen, phosphorus, and potassium. Pools retaining 1 to 4 inches of rain water for several weeks may provide sufficient habitat for the species.

Farm animals have contributed to the demise of the species through trampling of its habitat and depositing excessive amounts of fecal waste (i.e. nutrients) in the vernal pools. Extra nutrients in the pools result in eutrophication that causes algal growth and competition for carbon dioxide and light. Excessive soil accumulation in the pools causes invasion of more aggressive species that may shade out little amphianthus. The species is a poor competitor and requires high light intensity.

Many sites have been impacted by recreational abuse such as excessive foot traffic, motorcycles, bicycles, four-wheelers, and automobiles. Dumping of waste materials and fire-building in the pools also contribute to habitat destruction.

Management Objectives: Currently, there are no known populations of this species within the Installation. The species will be considered during the development process for any proposed construction activities. Planning Level surveys for all future projects that may affect habitat suitable for gratiola amphianthus will be surveyed for the presence of the species.

USFWS consultation or conference: None

ii. Georgia Rockcress (*Arabis georgiana*)

The Georgia rockcress is Federally listed as threatened (Appendix B2). It is a short-lived perennial herb known extant from less than 25 total populations/sites in Georgia and Alabama. The species is known to occur along the banks of the Chattahoochee River within the boundaries of the Installation. These areas are dominated by relatively undisturbed hardwood corridors. All known populations of Georgia rockcress on the Installation occur where the forests give way to the steep banks of the river. The areas where Georgia rockcress occurs on the Installation have little training potential for the military and conflicts with training have not been an issue in the past. On the

Installation, the species is potentially vulnerable to construction, feral swine, invasive plants, high-intensity fires, and timber harvesting.

Habitat Requirements and Limiting Factors: It is known to occur on rocky (limestone, shale, granite-gneiss) bluffs and slopes along watercourses, and also along sandy, eroding riverbanks hardwood stands. The major limiting factor is the availability of suitable habitat.

Management Objectives: Management will be to protect and maintain existing populations on the Installation.

USFWS consultation or conference: The SMC 2016-2021 for this species can be found as Appendix B2 in this INRMP. The current SMC was consulted on and initially approved by the USFWS on 13 August 2014. Annual reviews of this SMC are part of the annual review process for this document.

iii. Michaux's Sumac (*Rhus michauxii*)

Michaux's sumac is Federally listed as Endangered. It's a rhizomatous, densely hairy shrub, with erect stems from 1-3 feet in height. The compound leaves contain evenly serrated, oblong to lanceolate, acuminate leaflets. The flowers are small, borne in a terminal, erect, dense cluster, and colored greenish yellow to white. Flowering usually occurs from June to July; while the fruit, a red drupe, is produced through the months of August to October.

Habitat requirements and limiting factors: Michaux's sumac grows in sandy or rocky open woods in association with basic soils. This plant survives best in areas where some form of disturbance has provided an open area. Perhaps the most crucial factor endangering this species is its low reproductive capacity. A low percentage of the plant's remaining populations have both male and female plants. The plant is also threatened by fire suppression and habitat destruction due to residential and industrial development.

Management Objectives: Currently, there are no known populations of this species within the Installation. The species will be considered during the development process for any proposed construction activities. Planning Level surveys for all future projects that may have an impact on habitat suitable for Michaux's sumac will be surveyed for the presence of the species.

USFWS consultation and conference: None

iv. Harperella (Ptilimnium nodosum)

Harperella is Federally listed as endangered and is a perennial herb that grows to a height of 6-36 inches. The leaves are reduced to hollow, quill-like structures. The small, white flowers occur in heads, or umbels, reminiscent of a small Queen Anne's lace flower head. Flowers have five regular parts and are bisexual or unisexual, each umbel

containing both perfect and male florets. Seeds are elliptical and laterally compressed, measuring 0.06-0.08 inches in length. Flowering begins in May.

Habitat Requirements and Limiting Factors: Occurs on rocky, gravel shoals and sandbars along the margins of clear, swift-flowing streams. Harperella may also be found on granite outcrops in Georgia.

Management Objectives: Currently, there are no known populations of this species within the Installation. The species will be considered during the development process for any proposed construction activities. Planning Level surveys for all future projects that may have an impact on habitat suitable for harperella will be surveyed for the presence of the species.

USFWS consultation or conference: None

v. Fringed Campion (*Silene polypetala*)

The fringed campion is Federally listed as endangered and is a rhizomatous perennial herb growing from a thick taproot topped with a woody, branching caudex. There are several stems and shoots measuring up to 40 centimeters in length. The lance-shaped leaves are each up to 9 centimeters long by 25 centimeters wide and grow in pairs along the stem. The inflorescence usually has three flowers. Each flower has five pink or white fan-shaped petals with fringed tips, each measuring 1.5 to 2.5 centimeters long. The base of the flower is encased in a papery 10-veined calyx of sepals. The plant can reproduce by re-sprouting from its rhizome and what appears to be several plants may be one plant with genetically identical clones.

Habitat Requirements and Limiting Factors: This species inhabits hardwood bottoms and ravines in a very limited geographic range. As a result, it was probably comparatively rare even before the time of European contact. The greatest threat to this forest species is the progressive alteration or degradation of habitat due to logging. The resultant increased sunlight, lack of replenishment of the humus layer, and growth of aggressive exotic plants act in concert to displace this species. Additionally, sexual reproduction is impacted by browsing of flowering stems by deer.

Management Objectives: Currently, there are no known populations of this species within the Installation. The species will be considered during the development process for any proposed construction activities. Planning Level surveys for all future projects that may have an impact on habitat suitable for fringed campion will be surveyed for the presence of the species.

USFWS consultation or conference: None

vi. Relict Trillium (*Trillium reliquum*)

Relict trillium is listed as endangered by the USFWS (Appendix B5). Five relict trillium sites are known to occur on Fort Benning. The species occurs primarily in undisturbed moist hardwood forests in limited portions of Alabama, Georgia, and South Carolina. The 2015

USFWS Enhanced Training BO states the Fort Benning populations may comprise a significant portion of the protected populations and are essential for the recovery of the species. On the Installation, the species is potentially vulnerable to construction, feral swine, invasive plants, high-intensity fires, and timber harvesting.

Habitat requirements and limiting factors: The species is typically found in mature, undisturbed hardwood stands. The major limiting factor is the availability of suitable habitat.

Management Objectives: Management will be for the protection of existing populations on the Installation.

USFWS consultation and conference: The SMC 2016-2021 for this species can be found as Appendix B5 within this INMRP. The current SMC was consulted on and approved by the USFWS on 15 October 2015.

vii. Red-Cockaded Woodpecker (*Dryobates borealis*)

The RCW is listed as Federally endangered by the USFWS (Appendix B4). The RCW is about the size of the northern cardinal, the red-cockaded woodpecker is approximately 7 inches long (18 to 20 centimeters), with a wingspan of about 15 inches (35 to 38 centimeters). Its back is barred with black and white horizontal stripes. The red-cockaded woodpecker's most distinguishing feature is a black cap and nape that encircle large white cheek patches.

Habitat Requirements and Limiting Factors: The red-cockaded woodpecker makes its home in mature pine forests. Longleaf pines are most commonly preferred, but other species of southern pine are also acceptable. The lack of suitable open mature pine forests is the number one limiting factor for this species. While other woodpeckers bore out cavities in dead trees where the wood is rotten and soft, the red-cockaded woodpecker is the only one which excavates cavities exclusively in living pine trees. Cavities are excavated in mature pines, generally over 80 years old. The older pines favored by the red-cockaded woodpecker often suffer from a condition called red heart disease, which attacks the center of the trunk, causing the inner wood, the heartwood, to become soft. Cavity excavation takes one to six years.

The aggregate of cavity trees is called a cluster and may include one to 20 or more cavity trees on three to 60 acres. The average cluster is about 10 acres. Cavity trees that are being actively used have numerous, small resin wells which exude sap. The birds keep the sap flowing apparently as a cavity defense mechanism against rat snakes and possibly other predators. The typical territory for a group ranges from about 125 to 200 acres, but observers have reported territories running from a low of around 60 acres, to an upper extreme of more than 600 acres. The size of a particular territory is related to both habitat suitability and population density.

Management Objectives: RCW management objectives on Fort Benning includes: 1) maintaining a recovered population by monitoring habitat quality and reproduction; 2)

surveying for new cavity trees and clusters; 3) artificial cavity provisioning in clusters as needed; 4) timber stand management to promote longleaf regeneration; 5) thinning, overstocked pine and hardwoods in timber stands; 6) applying fire to pine stands (typically a three year fire return interval) to manage mid-story growth; 6) reducing adverse impacts to the RCW via the NEPA process.

USFWS consultation or conference: The USFWS has an Ecological Services field office on Fort Benning which allows for communication that is more effective during informal/formal consultations and meetings for RCWs, as well as for all other listed species. Consultation with USFWS regarding the RCW crediting program has recently occurred and is underway, which is detailed in Section D.14.

viii. Bald Eagle (Haliaeetus leucocephalus)

The bald eagle is Federally protected under The Bald and Golden Eagle Protection Act and the MBTA. The USFWS's National Bald Eagle Management Guidelines, as amended in 2007, provides general information and recommendations in regards to minimizing potential impacts and avoiding the disturbance of bald eagles. Two nesting pairs are known to occur on Fort Benning (Appendix B1). The current known nest locations are in Training Compartment S11 (Chattahoochee River) and C31 (King's Pond). The southern populations of the bald eagle nest primarily in the estuarine areas of the Atlantic and Gulf coasts from New Jersey to Texas and the lower Mississippi Valley. In Georgia bald eagles also nest on reservoirs and along major rivers, a substantial number of these birds winter along the lower Chattahoochee River, and the number of nest territories in the state has grown from 100 in 2007 to over 200 at present. The southern population of the bald eagle can be found throughout the lower 48 states as migrating or over-wintering birds.

Habitat Requirements and Limiting Factors: Bald eagles prefer forested areas adjacent to large bodies of water, such as lakes, rivers, and reservoirs. Limiting factors include habitat destruction and degradation, environmental contaminants, and illegal shooting

Management Objectives: Management will be for the conservation of existing populations on the Installation.

USFWS consultation or conference: Short-Term Incidental Take, Permit Number MB55244D-0, Effective 01/23/2020, Expires 09/30/2024. Due to natural resource management requirements involving prescribed fire activities and potential wildfire(s) resulting from military training and/or wildfire suppression activities, Fort Benning anticipates the re-application and renewal of this permit in 2024.

ix. Wood Stork (Mycteria americana)

The wood stork is listed as threatened by the USFWS (B8 Wood Stork). Wood storks are a transient species on Fort Benning occurring during their post-breeding dispersal. Wood storks breed in Florida, Georgia, Alabama, and South Carolina.

Habitat Requirements and Limiting Factors: Wood storks use a variety of freshwater and estuarine wetlands for nesting, feeding, and roosting. Limiting factors include loss of feeding habitat, water level manipulations affecting drainage, predation and nest tree regeneration, and human disturbance.

Management Objectives: Management will be for the protection and enhancement of existing habitat on the Installation.

USFWS consultation or conference: The SMC 2016-2021 for this species can be found as Appendix B8 within this INMRP. The current SMC was consulted on and approved by the USFWS on 15 October 2015.

x. Gopher Tortoise (*Gopherus polyphemus*)

The gopher tortoise is Federally listed as threatened in Louisiana, Mississippi, and west of the Tombigbee and Mobile Rivers in Alabama (Appendix B3). It is listed as a candidate species by the USFWS in the remainder of its range, including Fort Benning. It is also listed as threatened by Georgia. Gopher tortoises are a resident species of Fort Benning.

Habitat Requirements and Limiting Factors: The gopher tortoise most often lives on well-drained, sandy soils in transitional (forest and grassy) areas (Ernst and Barbour 1972). It is commonly associated with a pine overstory and an open understory with a grass and forb groundcover and sunny areas for nesting (Landers 1980). There are many factors, which are limiting the gopher tortoise, but the most significant threat is the loss of habitat due to intensive land use. On private lands, it is land development that most often competes for prime tortoise habitat that occurs on the high dry ground. On military properties such as Fort Benning, training is the major competitor for gopher tortoise habitat. Many types of training can be successfully accomplished without harming the habitat.

Management Objectives: Management will focus on the protection of existing suitable and potential habitat while maintaining the current population on the Installation. Management will be compatible with the 2008 “Management Guidelines For The Gopher Tortoise On Army Installations”.

USFWS consultation or conference: None

xi. Southern Hognose *(Heterodon simus)*

Southern hognose snake is listed as a SAR on DOD installations. The southern hognose snake is fairly small, heavy-bodied snakes that reach about 24 inches (61 cm) in length. These snakes are easily distinguished from most snakes in our region by their pointed, upturned snouts. Unlike eastern hognose snakes (*Heterodon platirhinos*), which occur in several color patterns, southern hognose snakes are always gray, tan, or reddish in color with a series of dark brown blotches down the center of the back and alternating smaller blotches along the sides.

Habitat Requirements and Limiting Factors: Although both species of the hognose snake in the Southeast prefer sandy areas for burrowing, the southern hognose snake is found almost exclusively in sandhill, pine flatwood, and coastal dune habitats of North Carolina, South Carolina, and Georgia, The sand ridges of central Florida also contain this species. Although introduced fire ants have been implicated in the decline of southern hognose snakes, loss of longleaf pine forest, urban sprawl, and conversion of upland habitats to agriculture are major limiting factors. The secretive habits of this species have hampered study of their ecology and population dynamics.

Management Objectives: Management will be for the protection and enhancement of existing populations on the Installation. Species and habitat will be considered during review of training events and projects occurring in likely habitat through Fort Benning's NEPA process.

USFWS consultation or conference: None

xii. Shinyrayed Pocketbook (*Lampsilis subangulata*)

In 1998, the shinyrayed pocketbook was officially listed as an endangered species (USFWS 1994, 1998). Historical records show that it was once common in the main channel of the Flint and Chipola rivers; however, it has not been collected from the main channel of the Apalachicola River. Brim-Box and Williams reported that the species were found not only in tributaries of the Flint River but in tributaries of the Chattahoochee River in Georgia and Alabama. There are currently no known populations on Fort Benning. The USFWS has however determined that all of Uchee Creek is considered to be critical habitat for the species (Appendix B6).

Habitat Requirements and Limiting Factors: Lampsilis subangulata was reported from medium-sized creeks and rivers in clean and silty sand substrates in slow-to-moderate current (Williams and Butler 1994). Similarly, Heard (1979) found that in Florida populations of L. subangulata were found in muddy sand and sand in slight-to-moderate current. Clench and Turner (1956) reported that L. subangulata preferred small creeks and spring fed rivers. Lampsilis subangulata is unique because it is one of 4 mussels that produce a superconglutinate (a packet of larvae encased in a mucous tube) which is used to attract fish hosts (O'Brien et al. 1995, O'Brien 1997). Hosts fish include largemouth bass, Micropterus salmoides, and the spotted bass, M. punctatus (O'Brien 1995).

Management Objectives: Although no known populations exist on the Installation, Management will be for the protection and enhancement of the designated Uchee Creek critical habitat. Fort Benning will evaluate proposed actions that may impact the quality and integrity of the creek prior to implementation.

USFWS consultation or conference: None

xiii. Pickering's Morning Glory *(Stylisma pickeringii)*

Pickering's morning glory is listed as a species at risk (SAR) on DOD installations. It grows on the open and sunny sand dunes found in the Pine Barrens. It has low, trailing

vines and a delicate star-shaped white flower that blooms in early summer. It was rare even when it was first discovered in the late 1800's. Pickering's morning glory is primarily a southern species that reaches its northern limits in New Jersey.

Habitat Requirements and Limiting Factors: Open sandy areas with little vegetative competition. Found locally almost exclusively on Lakeland sands. Limiting factors include shading from forest growth, competition from non-native vegetative species, and a variety of ground disturbing activities (e.g. feral hog damage, off-road vehicles, etc.).

Management Objectives: Management will be for the protection and enhancement of existing populations on the Installation. Species and habitat will be considered during review of training events and projects occurring in likely habitat through Fort Benning's NEPA process.

USFWS consultation or conference: None

xiv. Southern Elktoe (Alasmdonta triangulate)

The southern elktoe freshwater mussel has no current Federal species status (Appendix B7) but currently proposed for listing by the USFWS. The southern elktoe has a moderately thin, inflated shell, often with distinct concentric sculpturing originating at the umbo and rarely exceeding 70 mm (2 inches) in length. Umbos are elevated above the hingeline and positioned to the anterior portion of the sub-triangular shell. The anterior margin of shell is rounded while the posterior margin is bluntly pointed. The mussel's posterior ridge is sharply angled and prominent. Adults typically have a dark brown to black periostracum with faint rays while young individuals have yellow to green rays present.

Habitat Requirements and Limiting Factors: Typically occupies backwater and pools of large creeks to rivers with silt, mud, sand, or gravel substrates. The southern elktoe is restricted to the Apalachicola River system while historically found in the Chattahoochee and Flint rivers of Alabama and Georgia and the Apalachicola and Chipoal rivers of Florida. In Alabama, it was last reported from (and still extant in) Uchee and Little Uchee creeks in Russell and Lee counties (Wisniewski 2007). Primary limiting factors include river dredging and impoundment of waterways.

Management Objectives: Although no known populations exist on the Installation, Management will be for the protection and enhancement of the designated Uchee Creek critical habitat. Fort Benning will evaluate proposed actions that may impact the quality and integrity of the creek prior to implementation.

USFWS consultation or conference: None

xv. Oval Pigtoe (Pleurobema pyriforme)

The oval pigtoe is protected as an endangered species by the Endangered Species Act. It is a small freshwater mussel that can reach a length of 2.4 inches (six centimeters). This species has a flattened oval-shaped shell that is a yellowish-brown on the outer

section with a white or salmon hued inner section. It also has two large teeth in the left and right valve (Florida Fish and Wildlife Conservation Commission 2020).

Habitat Requirements and Limiting Factors: The oval pigtoe inhabits mid-sized rivers and small creeks with a slow to moderate current and a sandy silt to gravel floor. The primary limiting factors of the oval pigtoe is river dredging and the impoundment of waterways. In Florida, this species can be found in the Chipola, Ochlockonee, and Suwannee river systems and Ecofina Creek; while found in the Ochlockonee, Flint, and Chattahoochee river systems in Georgia (Florida Fish and Wildlife Conservation Commission 2020).

Management Objectives: Currently, there are no known populations of this species within the Installation. The species will be considered during the development process for any proposed construction activities. Planning Level surveys for all future projects that may impact habitat suitable for the oval pigtoe will be surveyed for the presence of the species.

USFWS consultation or conference: None

xvi. Etowah Darter (*Etheostoma etowahae*)

The etowah darter is listed as endangered by the USFWS. The Etowah darter is a small, percid fish (1.6-2.2 inch, adult size) that is moderately compressed laterally and has a moderately pointed snout with a terminal, obliquely angled mouth. The body ground shade is medium brown or grayish olive. The lower opercle and branchiostegal rays have a pale bluish-green wash which is intensified in nuptial males. The side is usually pigmented with 13 or 14 small dark blotches just below the lateral line. The breast in nuptial males is dark greenish blue. The spinous dorsal fin is suffused dusky black olive with a red margin. The soft dorsal and caudal fin have four bands. The pelvic fins are clear to dusky black with a pale green blue wash; pectoral fins are dusky black. The Etowah darter differs from the greenbreast darter (*E. jordani*), a species with which it has previously been confused, by the absence of red marks on the sides and anal fins of male specimens (Wood and Mayden 1993).

Habitat Requirements and Limiting Factors: The etowah darter lives in cool, medium and large creeks or small rivers approximately 50-100 feet wide, with moderate or high gradient. The species generally is found in relatively shallow riffles (6-18 inches), with large gravel, cobble, and small boulder substrates. The fish typically is associated with the swiftest portions of shallow riffles, but occasionally adults are taken at the tails of riffles. Sites with the greatest abundance of Etowah darters tend to have clear water and relatively little silt in the riffles. The darter is intolerant of impoundments and is not found in pool habitats (USFWS 1994).

Management Objectives: Although no known occurrence of the etowah darter has been discovered within the boundaries of Camp Merrill, the Etowah River is critical habitat for the species. Management for the protection and enhancement of existing populations downstream occur through avoiding disturbances potentially impacting the Etowah River.

USFWS consultation or conference: None

b. State Protected Species

Table D.5 lists species that are state protected but do not have any Federal protection or appear on the Army SAR list for protection. These species are considered by NRMB when analyzing the effects of proposed actions and formulating natural resource management activities. In accordance with DoDI 4715.03, Enclosure 3(3)(d) and AR 200-1, 4-3(5)(w), Fort Benning to the best of its ability, implements conservation and management efforts to further the conservation of State-listed species when the action is practicable and does not conflict with legal authority, military mission, or operational capabilities.

Table D.5: State Protected Species

Scientific Name	Common Name	Georgia Listing	Alabama Listing	Installation Priority
Plants				
Croomia pauciflora	Croomia	T	SP	Low
Myriophyllum laxum	Lax water-milfoil	T	SP	Low
Nestronia umbellula	Indian olive	T	SP	Moderate
Sarracenia rubra	Sweet pitcher plant	T	SP	Moderate
Brickellia cordifolia	Flyr's nemesis	T	SP	Low
Sarracenia psittacina	Parrot pitcherplant	T	SP	Moderate
Mammals				
Geomys pinetis	Southeastern pocket gopher	SP	SP	Moderate
Myotis austroriparius	Southeastern myotis	SP	SP	Moderate
Reptiles				
Graptymys barbouri	Barbour's map turtle	T	SP	Low
Macroclemys temminckii	Alligator snapping turtle	T	SP	Low
Pituophis melanoleucus mugitus	Florida pine snake	SP	SP	Moderate
Amphibians				
Lithobates capito	Gopher frog	SP	SP	Low
Fish				
Cyprinella callitaenia	Bluestripe shiner	T	SP	Low
T = Threatened, SP = State Protected				

8. Migratory Birds

Natural resource management activities, will incorporate management practices consistent with the MBTA that benefit the health and well-being of birds and their habitats, when consistent with the military mission, military readiness, and the safety of Installation personnel. Nonetheless, Section 315 of the MBTA provides that the prohibitions of the MBTA do not apply to the incidental taking of migratory birds by a member of the Armed Forces during military readiness activities, but the Secretary of Defense, in consultation with the Secretary of the Interior, is to minimize and mitigate, to the extent practicable, adverse impacts of the readiness activities on affected migratory birds.

a. Migratory Bird Conservation Programs

Migratory birds are important components of biological diversity. Their conservation helps sustain ecological systems and meets the public demand for education and outdoor recreation. Conservation measures should generally focus on reducing stressors on populations and restoring/enhancing habitat where actions can benefit specific ecosystems. It is also important to recognize that actions taken to benefit some migratory bird populations may adversely affect other migratory bird populations.

The management of natural resources on the Installation benefits migratory birds through efforts such as invasive-species control, habitat enhancement/restoration, water-quality improvement, and wetland conservation. In addition, the Installation implements and sponsors programs and research such as, bird inventories and monitoring programs to track bird movements and numbers. Fort Benning's USAEC-approved Integrated Pest Management (IPM) program reduces the un-necessary use of pesticides (insecticides, herbicides, fungicides, etc.) which helps to lessen any potential impacts to migratory birds and their habitats.

b. Bird Monitoring & Nesting Programs

The Installation works collaboratively with other Federal and state agencies, educational organizations, non-governmental organizations, and volunteer programs to benefit migratory birds. These programs help provide enhanced breeding opportunities for many species through the placement and maintenance of nesting structures. In addition to nest structure programs, the Installation has sponsored multiple monitoring, survey, and research projects related to migratory birds. Such programs help contribute to the body of data that is used to formulate local and regional conservation management plans and ensure the future of many species of concern within the region.

c. Migratory Bird Protection

In 2006, the USFWS and DoD initially signed a MOU to outline a collaborative approach to promote migratory bird populations. The MOU identified specific activities where cooperation between the parties will contribute substantially to the conservation of migratory birds and their habitats.

In the event a proposed action is anticipated to harm migratory birds, Army natural resources managers will confer with USFWS to develop measures to reduce or eliminate negative impacts. In rare cases when impacts are unavoidable, a permit request allows USFWS to track and monitor the affected bird populations. Additionally, the permit specifies certain conditions and terms that must be followed to minimize potential impacts.

d. Bald & Golden Eagle Protection Act

Fort Benning will ensure that monitoring and protection of its bald eagle nests will comply with the USFWS's National Bald Eagle Management Guidelines as amended in 2007. Excerpt included in Appendix B1. Two nesting pairs are known to occur on Fort Benning. The current known nest locations are in Training Compartment S11 (Chattahoochee River) and King's Pond Recreation Area. The species is vulnerable to several activities on the Installation: low flying aircraft, timber harvest, human disturbance, and military training. On the Installation, it is believed that the nesting season begins the beginning of November and continues until the middle of May each year. Egg laying has historically occurred during the last week of December through the 1st week of January. If successful, juvenile eagles usually gain the ability of flight by the middle of April. On most years, the adult eagles will migrate out of the nesting area by the end of May.

The two known nests will be checked starting in November for any nesting activity. If there is activity, the nest will be monitored once a month and continuing until fledging or until nest inactivity. Monitoring will be 60-90 minutes beginning ½ hour before sunrise or before sunset to check for productivity and disturbance. Personnel will look for disturbance, low flying aircraft, predominant flight altitudes and directions, nesting/fledging success, feeding behavior, and dietary preferences. Aircraft overflights within the "No Fly Zone" will be reported immediately to Lawson Army Airfield (LAAF) Flight Operations Center and corrective actions will be taken to prevent future occurrences.

On 23 January 2020, Fort Benning was issued a short-term eagle incidental take permit (Permit Number: MB55244D-0) for both of the existing nests. The permit will expire on 30 September 2024. The permit was issued to cover all activities associated with the repair of King's Pond Dam and all prescribed burn activities and any wildfire(s) that result from military training and/or wildfire suppression activities associated with the Kings' Pond Recreation Area.

9. Fish & Wildlife

Two Directorates on Fort Benning manage outdoor recreation activities, the Directorate of Family, Morale, Welfare and Recreation (DFMWR) and the DPW's NRMB. The DFMWR manages such facilities and activities as Uchee Creek Recreation Area, the River Walk, Russ Pond Children's Fishing Rodeo, and the rental of outdoor equipment (i.e. boats, canoes, tents, etc.). The NRMB manages the fishponds, wildlife openings, and publishes the hunting and fishing regulations.

a. Recreation

Although ecosystem management is a method for maintaining or restoring natural systems, it must also support sustainable economies and communities. It must consider functional biological systems, but also include human considerations. In this regard, outdoor recreation is a critical element in providing for the needs of Fort Benning and enhancing the community's quality-of-life. One of Fort Benning's goals is to provide Soldiers, civilians, Families, and retirees the best facilities, services, and programs in the Army. Quality-of-life is one of the five key processes that have been developed as part of the Army's Performance Improvement Criteria. A Soldier has a hectic, fast-paced life. Time spent with Family and friends may be infrequent and short. Outdoor recreational opportunities are often the activity of choice as Soldiers are outdoor-oriented and outdoor recreation is often close and inexpensive. Time spent outdoors hiking, camping, hunting, and participating in other activities promotes an understanding and appreciation for wildlife, plants, and nature in general. For Soldiers, an additional benefit of outdoor recreation activities, particularly hunting, is that they enhance infantry skills. Skills such as land navigation, terrain analysis, camouflage, movement techniques, and tracking are used when hunting deer and turkey.

Quality outdoor recreational activities depend on proper stewardship of natural resources. Proper management such as timber thinning, prescribed fire, tree planting, soil erosion control, protection of species of conservation concern and Unique Ecological Areas, and pond maintenance will increase outdoor recreational opportunities by providing the appropriate settings. A clean, well-stocked lake or pond is inviting to the community and provide camping, fishing, picnicking, boating, and other activities. Large trees with open vistas provide hiking, wildlife viewing, and aesthetic qualities. A variety of habitats such as wetlands and hardwood bottomlands will provide excellent hunting opportunities. A well-managed dove field will facilitate family dove hunts.

Game and Sport Fish Program
The goal of the Game and Sport Fish Program is to facilitate quality management of game and sport fish populations through effective management of habitat and resources consistent with mission requirements and sound biological principles to provide high quality recreational opportunities for Soldiers, civilians, Family Members, and their guests, and the public when feasible. As outlined in Appendix B9, the program provides guidance and direction to ensure management goals and objectives are met. It addresses the biological aspects of game and sport fish management and other NRMB administrative responsibilities associated with the use of 21X funds. These funds are derived from the sale of Installation hunting and fishing permits.

Some aspects of outdoor recreation, particularly hunting and fishing are the responsibility of the Program. The Program works collaboratively with The DFMWR and Directorate of Plans, Training, Mobilization & Security (DPTMS) to facilitate those opportunities.

The Game and Sport Fish Program manages game species in a manner consistent with Fort Benning's ecosystem approach. The associated objectives are listed below.

- Develop and implement a game and sport fish program of appropriate scope and scale such that recreational opportunities are provided consistent with training mission requirements, Federally listed species recovery, and the ecological integrity of the landscape.
- Utilize scientifically based, modern game management practices, to the extent practicable, to be compatible with an ecosystem-based approach.
- Identify habitat requirements for selected game species. Develop an ecosystem-based strategy to maintain, protect, and enhance these habitats.
- Develop and implement management plans to achieve population objectives for selected game.
- Monitor the population status of game species by selecting those species that are sensitive to management actions and that can act as indicators of ecological change.
- Coordinate inventory, monitoring, management and research efforts. Share data results from such efforts with appropriate Federal and state natural resources agencies.

Table D.6: Game Species Data Collected

Data Description	Frequency of Collection	*Last Update
Game Species		
Deer Harvest	Daily	Live
Turkey Harvest		
Feral Swine Harvest		
Dove Harvest		
Fish		
Bass Harvest	Daily	Live
Bream Harvest		
Catfish Harvest		
Crappie Harvest		
*Updates collected in real-time via iSportsman.		

Fort Benning possesses a wide diversity of wildlife habitat and abundant populations of many game and sport fish species. These species provide significant outdoor recreational value in the form of hunting, fishing, and wildlife viewing. Management of these species is important to meet user demands and includes setting regulations and ensuring adequate enforcement of those regulations, providing reasonable opportunities for recreation activities, maintaining habitat, conducting censuses and surveys of game and sport fish populations, and controlling populations of selected species when needed. A list of game species occurring on Fort Benning is contained in Table B.9.1 of Appendix B9.

Policy and Guidance
The Sikes Act of 1960 authorizes the Secretary of Defense to carry out a program for the development, maintenance, and coordination of wildlife, fish, and game conservation and restoration. AR 200-1 (Environmental Protection and Enhancement,

13 December 2007) states that management of flora and fauna be consistent with accepted scientific principles for conservation of indigenous species and provide access for hunting, fishing and trapping consistent with security requirements and safety concerns. It goes on to add that nongame as well as game species will be considered when planning land management activities.

Game and sport fish species provide outdoor recreation opportunities and are also components of the native biodiversity of the area. Therefore, laws and regulations are important in directing the management of game and sport fish species. Feral swine (*Sus scrofa*) are not considered a game species on Fort Benning, but are included in this Plan and FB Regulation 200-1 (Hunting Regulation) to legalize their hunting on Fort Benning. Feral swine are not a protected species under state or Federal law.

Public Access
Fort Benning is an area of exclusive Federal jurisdiction and public access and activities are regulated and limited. While the safety of all hunters is of primary concern, nonaffiliated civilian hunters are relatively un-initiated with respect to military training/operations and military specific safety concerns that pose heightened levels of risk. The Fort Benning landscape has numerous safety hazards including heavy track and wheeled vehicle movement, extensive night maneuvers, remote and unmarked training compartments, munition marked dud areas, deep erosion gullies, abandoned wells, concertina wire from training, wildfires and prescribed fires, and a training area road network that often washes out and at times becomes impassible.

Fort Benning has four different live fire range complexes. With multiple Training and Doctrine Command, Forces Command, and Special Operations Command (SOCOM) elements stationed at Benning, live fire training far surpasses other installations. In FY20, over 40 million rounds were discharged at Fort Benning; more than double the amount of ammunition expended on any other Installation. Other constraints include increased training requirements and operational tempo, diminished resources to support and enforce an expansion of the hunting and fishing program, discipline limitations when dealing with nonaffiliated civilians, and liability. There are also eight dud areas ranging in size from five acres to 10,000 acres. The Explosive Ordnance Detachment detonates duds if they land outside ranges, or if dudded munitions from historic uses are found.

Due to safety and security concerns, Fort Benning limits access for hunting and fishing inside the boundaries of the Installation, except on navigable waters of the Chattahoochee River. While unrestricted use by the general public is prohibited, Fort Benning does allow non-affiliated civilians of the general public to purchase temporary permits to hunt and fish on the Installation as guests. Guest must be sponsored and supervised by an authorized participant as required in FB Regulation 200-1 (FB200-1). The list of authorized participants includes:

- United States Armed Forces active duty personnel
- United States Armed Forces retired personnel
- Veterans having a service connected disability of not less than 30 percent

- Medal of Honor recipients
- DoD Civilian Employees working full-time or equivalent status,
- Retired DoD Civilian Employees
- Federal Civilian Employees working full-time or equivalent status on Fort Benning
- Retired Federal Civilian Employees who were employed at Fort Benning immediately prior to retirement
- National Guardsmen and Reservists who are on active status regardless of where they are assigned
- Surviving spouses of military personnel who possess a valid dependent ID card
- Foreign military personnel assigned to Fort Benning
- Primary dependents of all listed above (i.e. a primary dependent is defined as a lawful spouse or an unmarried child (including step children) who is less than 21 years old or those individuals less than 23 years old who are enrolled in a full-time course of education above high school level which receive over half of their support from the sponsor, and any child, regardless of age, living as a dependent due to disability)

The River Walk (i.e. bike/hike greenway) is open for public use. For a nominal fee, the public can utilize the boat ramp at Uchee Creek to obtain access to the Chattahoochee River. Other forms of outdoor recreation that Fort Benning offers includes hiking/biking on the Follow Me mountain bike trails, boating at Uchee Creek Recreation Area, and hiking/biking along roadsides.

Program Activities
The Game and Sport Fish Program has been in existence for over 50 years and has undergone many changes. It peaked in the late 1960s and 1970s when there were hundreds of planted wildlife openings totaling thousands of acres, 14 managed fish ponds (with eight receiving intensive management), an active Rod and Gun Club with skeet ranges, restaurant, and tackle shop, and gun dog field trails. Today, the scope remains relatively large with the program serving over 4000 hunters and fishermen annually.

Integration with an Ecosystem-Based Approach to Management
Under an ecosystem approach, game populations are managed consistent with and to the benefit of listed and nongame species and native plant communities. In this regard, the Game and Sport Fish Program has been scaled down from an enormous logistical effort that managed thousands of acres directly for increased game populations to a relatively small program that no longer has a primary focus of managing game populations to maximize carrying capacity. Although increased game populations are not the goal of ecosystem management, populations of game species may expand with continued thinning, prescribed fire, and longleaf establishment. Nevertheless, those potential expansions will be directly tied to management unit size and distribution as it pertains to prescribed burning. Ecosystem-based management activities which have been incorporated into the Game and Sport Fish Program are discussed below.

b. Fisheries Management

Fish Pond Management
There are 13 named ponds available for fishing that range in size from one acre to 72 acres, for a total manageable acreage of 243 acres. Four of the 13 ponds receive active management. Management of the fish ponds includes a variety of activities that fall into four categories. These activities are listed below.

- Pond management: The Game and Fish program of Fort Benning's NRMB has responsibility for stocking fish, liming, fertilizing, and pond balance checks by shocking and seine hauls, and aquatic weed control.
- Support facilities: The DFMWR has responsibility for outdoor recreational support facilities and structures such as picnic tables, grills, fishing piers, boat landings, and docks at Kings, Weems, Twilight and Russ Pool.
- Grounds maintenance: Mowing the outdoor recreation areas and other open grassy areas around ponds occurs as needed and improves accessibility. Fort Benning's NRMB personnel coordinates the burning the open areas for vegetation control as necessary.
- Dam and water control structure: Repair and maintenance activities required on dam and water control structures are reported to DPW, and are performed by contract personnel. Periodically, water control structures are obstructed by beaver activity, which is reported to the Chief of NRMB. Beaver dams will be removed utilizing USDA Animal and Plant Health Inspection Service (APHIS) personnel when there is a potential for damage to personnel or property.

A list of ponds, their location, size, and other information is contained in Table B.9.4 Appendix B9.

c. Game Management

Wildlife Opening Planting
While wildlife openings are managed with a primary emphasis on game species, they also provide valuable habitat for Neotropical bird migrants, small mammals and insects. Wildlife opening plantings consist primarily of fall plantings of wheat, crimson clover, and oats and summer plantings of browntop millet. The major focus of the fall plantings is to attract deer and wild turkey to these openings. The summer plantings in dove fields focus on attracting mourning doves from September through December. Additionally, current management focuses on ensuring dove fields provide attraction for multiple species year round by establishing strips of winter grains as well. Currently, 27 wildlife openings are available for planting that range in sizes for a total of approximately 92 acres of plantable land. A total of three dove fields are available for planting that range in size from approximately 8 to 16 acres for a total of approximately 36.5 acres. A list of wildlife openings, their location, size, and other information is contained in Table B.9.2 of Appendix B9.

Several management techniques have been incorporated to further integrate game management with an ecosystem approach; including leaving field buffers of native vegetation, using no-till planting methods whenever feasible to minimize ground

disturbance, and incorporating wildlife plantings into areas that are designated for specific purposes such as a power line rights-of-way, landing zones, or artillery firing points (multi-purpose areas). A list of plant species approved for planting in wildlife openings is provided in Table B.9.3 in Appendix B9. Adherence to this list will help to prevent the introduction of invasive species. Considerations for the development of future wildlife opening include, but are not limited to:

- Hunters' request
- Current land use/land cover (i.e. disturbed/cleared areas preferred over undisturbed forested areas)
- Topography (i.e. lower elevated sites preferred over higher elevated sites)
- Avoidance of Unique Ecological Areas
- Evaluating threatened and endangered species requirements
- Evaluating ecological integrity requirements
- Logistics of maintaining the site, soil type, slope, and whether the site is a strategic location for the desired species

Quality Deer Management and Deer Check Stations
Quality Deer Management (QDM) is a wildlife management practice that seeks to produce healthy deer populations by improving the herd's age structure, establishing an appropriate sex ratio, and keeping populations in balance. The primary tool for these goals involves the selective harvest of individual animals. Under Installation's QDM practice and FB200-1, all harvested antlered deer are required to have at least four points (one inch or longer) on one side of antlers. Based on Fort Benning's 2019-2020 Deer Season Report, multiple data sets suggests QDM continues to facilitate the primary objective of ensuring a healthy and sustainable population.

Hunters are required to bring all harvested deer to the deer check station on dates of mandatory deer checks as prescribed in FB200-1. Generally, the opening weekend of the season is a required weekend in both Georgia and Alabama. Typically, four to ten check station days are managed where deer are weighed, sexed, aged, does checked for lactation, and antler measurements recorded. This information is compared to previous years to determine trends in physical condition and ultimately drive management strategies.

Hunting and Fishing Regulation Development
Annual revision of the FB200-1 (Hunting, Fishing and Recreation) is the responsibility primary of the NRMB. FB200-1 is a Fort Benning-specific document that covers responsibilities, access, permits, fees, hunter check-in/check-out procedures, season dates and bag limits and penalties for various violations. While some policies found in FB200-1 may be more restrictive than state law, all are based on and in accordance with the wildlife action plans of Georgia and Alabama respectively. The goal is to publish FB200-1 by 15 August each year.

Garrison Commander's Hunting and Fishing Advisory Council
The objective of the Garrison Commander's Hunting and Fishing Advisory Council (Council) is to keep the Garrison Commander advised on the scope and character of

hunting, fishing, and other recreation issues on Fort Benning. The Council also provides input to DPW pertaining to the updating and rewriting of the Hunting and Fishing Regulations. Fort Benning's NRMB is responsible for setting the date, time, and place of the meetings after obtaining approval from the Council President, and provides technical expertise on wildlife management and on interpretation of hunting and fishing regulations.

Administration & Funding
The Game and Sport Fish Program is funded from the sale of hunting and fishing permit fees. Army Policy Guidance for Fish and Wildlife Conservation Fund, 21X5095 (8 January 2002) and DFAS-IN Regulation 37-1 (June 2004) define how fees are collected and accounted. The Sikes Act stipulates that such fees can be used only at the Installation from which collected for the protection, conservation, and management of fish and wildlife, including habitat restoration and improvement, biologist staff and support costs and related activities. The funds cannot be used for construction of outdoor recreational structures such as fishing piers. No more than 10 percent of the annual 21X collections can be used for administration of the hunting and fishing permit sales. 21X5095 funds roll over at the end of each fiscal year if not spent.

Hunting and fishing permit fees generate approximately $70K annually. This annual revenue is not sufficient to support current management efforts.

Personnel
Hunting and fishing permit verifications are conducted by DFMWR. Fort Benning's NRMB manages iSportsman, which is the mechanism for selling hunting and fishing licenses, the fish ponds, wildlife openings, operates the deer check station, develops the hunting and fishing regulations, and provides support to the Garrison Commander's Hunting and Fishing Advisory Council.

Enforcement of the Installation hunting and fishing regulations as well as enforcement of state and Federal natural resources laws is the responsibility of the Directorate of Emergency Services (DES), Conservation Law Enforcement Division. The game wardens are DoD civilians, although active duty military police personnel are often detailed to provide support.

The manpower situation of the Game and Sport Fish Program is less than optimal and remains in a state of uncertainty as contract support is required to facilitate adequate management of the program. One full-time Wildlife Biologist with responsibilities beyond Game and Sport Fish management is the only current staffed position. Ideally, a Wildlife Biologist and two permanent Wildlife Technicians would operate the program. It is unlikely that such staffing levels could occur in the near future given funding constraints and manpower structure.

Equipment
Fort Benning has sufficient equipment available for management at this time including tractors, farming implements, boats, boat trailers, boat motors, GSA fleet trucks and

other miscellaneous equipment to support the Game and Sport Fish Program. Several farm implements are being considered for turn-in and replacement in the coming years.

Initiatives
A five-year summary of game and sport fish management and administrative activities is provided in Appendix B9. Activities that typically occur at least once every year such as fertilizing fish ponds, working the deer check station, and planting fall openings are identified in Table B.9.5.

d. Non-Game Management

Under an ecosystem approach, game populations are managed consistent with and to the benefit of nongame species and native plant communities. Non-game species benefit from management activities related to the endangered species management programs as well as game management activities on the installation. RCW management is one of many examples of how non-game species benefit from current management practices. RCWs require mature open pine forest in which to forage and nest. Many non-game species, both plants and animals, also thrive under these same conditions. Management activities for RCWs such as thinning existing pine forests, planting of longleaf pine trees, and invasive species control are beneficial to a host of upland non-game species that depend on these same habitat conditions.

10. Vegetation

The vegetation of Fort Benning reflects its location astride the “Fall Line,” which extends from western Georgia to the Carolinas. Vegetated acreage on Fort Benning consists of maintained lawn and grassed areas, open land and old fields (shrubs and herbaceous plants), and forested woodlands. Table D.7 provides a more specific landscape profile of land utilization at Fort Benning. The plant communities found on Fort Benning are a mosaic of varying seral stages held in check by the occurrence of fire disturbances and systems that are free from the other anthropogenic development pressures that have eroded their existence in other places across the Southeast.

Camp Merrill
The vegetation of Camp Merrill lies within the Piedmont region of Georgia. Vegetated acreage on Camp Merrill consists of maintained lawn and grassed areas and small pockets of hardwood dominant woodland areas. The plant communities found on Camp Merrill are typical of neighboring farms and cantonment areas with maintained lawns and other wooded spots that not been subject to regular fire disturbances.

Table D.7: Landscape Composition of Fort Benning

Landscape Use	*Acres	*Percent cover
Upland Forests	79,000	43%
Bottomland Forests	43,000	23%
Water/Wetlands	19,000	10%
Impact Area	16,000	9%

Landscape Use	*Acres	*Percent cover
Cantonment	15,000	8%
Ranges	11,000	6%
*Approximate acres & percent coverage.		

a. Flora & Habitat

At Fort Benning, the management of the longleaf pine ecosystem and other rare and unique plant communities are monitored, managed, and/or protected by Army staff from training activities. Conversely, Camp Merrill is a cantonment area and passively managed similar to Fort Benning's cantonment areas where land uses influence the flora to resemble an urban community setting.

b. Forest Management

The Chattahoochee River and its tributaries are a prominent geographic and hydrologic feature of Fort Benning's landscape that broadly divided the forest into either upland or bottomland types. The bottomland forests have soil and hydrologic conditions that generally inhibit activities with heavy mechanized equipment. Therefore, bottomland disturbances are mostly limited to unmounted personnel training and forest management activities. These physiographic characteristics combined with the presence of riverine hydrology and a lack of disturbance promotes an ecosystem with unique plant communities. Some of these bottomland forests on Fort Benning have occurrences of endangered species such as the relict trillium and Georgia rockcress. The Fort Benning management philosophy for the bottomland hardwoods is passive management with limited monitoring and preservation. Table D.7 summarizes Fort Benning's forest type.

Most of the upland forests occur on the coastal plain physiographic region. A significant portion of this area is composed of deep sands, of which the Sand Hills are the deepest. The uplands vary tremendously from mesic, fine textured soils of clay and loams, to xeric deep coarse sands on the ridges. It is documented from historical accounts and records that the vast majority of the uplands were covered by some level of the longleaf pine forests prior to European settlement. The longleaf pine forest, with periodic fire exposure is considered to be climax condition with minimal change over time in the absence of disturbance. The component species makeup of longleaf pine forests will vary across the gradient of soil and hydrologic conditions from mesic longleaf pine flatwoods to xeric longleaf pine-scrub oak woodlands. The majority of the longleaf pine forests host their own unique plant communities complete with Federally protected species such as RCWs. The open forests conditions of mature longleaf pine forests benefits RCWs and other native upland species in addition to providing an excellent training environment. Therefore, Fort Benning's desired future condition of the upland forest is a longleaf pine dominated forest with canopy trees 80 years or older, averaging some 14 to 19 inches in diameter in a sparsely stocked (basal area 35 square feet/acre) to medium stocked (basal area 80 square feet/acre) condition. The mid-story should be sparse (i.e.<10% cover) and the ground layer should be relatively continuous and rich (i.e. >50% cover in herbaceous species, 10-50% cover in bunch grasses, 5-10% cover

in legumes, 5-25% cover in composites, 0-25% cover in woody shrubs, and 50-100 species present on any 400 square meters).

Currently, the Fort Benning forest monitoring and forest inventory programs recognize seven different upland forest types: mixed pine, loblolly pine, mixed pine-longleaf, pine hardwood, hardwood pine, longleaf pine plantation, and longleaf pine. It is desirable for all of the upland pine stands, no matter the species makeup, to be managed and maintained in an open forest condition similar to the aforementioned desired future condition. The current mature longleaf pine stands on Fort Benning are in an open forest condition and make up approximately 4% of the upland forest habitat. These forest stands are considered stable and only need prescribed fire every two to three years to maintain their forest condition. In very limited and currently unforeseen circumstances, chemical treatment may be required to control invasive species or silvicultural problem. Under rare circumstances (e.g. storm events, insect infestation, or hardwood development issues, etc.), would mechanical silvicultural treatment be used in these areas to realign or correct the stand to the desired future conditions.

Mixed pine-longleaf stands have a significant component of hardwood biomass <29.5% and longleaf pine biomass 29.5-49.5% in the pine overstory. It is thought that open mixed pine stands with a significant longleaf pine component are similar enough to mature longleaf pine stands to be considered stable and only need periodic fire every two to three years to maintain forest conditions. Additionally, chemical and/or mechanical treatment may be required occasionally to control pests or correct potential silvicultural issues. If forest monitoring indicates that any of these stands are trending towards a loss of longleaf pine influence, these stands may be considered for mechanical silvicultural actions to correct the stand to be more in line with the above stated desired future condition of upland forests. In general, thinnings that occur in this situation will be applied according to the uneven-aged approach favoring the removal of offsite species and leaving longleaf pines to foster the ecosystem.

The current longleaf pine plantation stands are the result of approximately 30 years of offsite pine and hardwood species removal. Most of these stands are younger than 30 years of age and are comprised of relatively dense longleaf trees with limited encroachment from loblolly pines, sweetgum, and oak species. These stands are primarily maintained by periodic burning; however, some of the older stands will require thinning within the next five years. Most of these stands are well established and will be managed through sound thinning practices for even-aged management. Nevertheless, the end result will not culminate with a terminal harvest, but will progressively convert to uneven-age management over time to establish a mature, longleaf pine ecosystem.

For management purposes, the current pine-hardwood and hardwood-pine stands can be lumped together and still only make up a small percentage of the manageable upland forestlands. The presence of these stands indicates some type of issue with past management, such as an absence of prescribed fire. Some of these stands could be considered in the advanced seral stage from previous open pine management and may be converted to longleaf pine plantations during the next five years. Nevertheless, the

increased presence of hardwoods can be an indicator of hydrologic challenges for prescribed fire use to control hardwood encroachment. Under this scenario, these areas may be allowed to succeed into hardwoods and reclassified for management that is more passive. This will be determined on a stand-by-stand basis.

Loblolly pine stands are mostly plantations established in the prior (pre-1990s) forest management regime that focused more on fiber production than ecosystem management. These stands will eventually need to be converted to longleaf dominated stands to obtain the above stated desired future condition. It is expected that Fort Benning will execute many different silvicultural treatments in these stands in the near future to aid in this process. In general, these stands will be treated as even-aged stands; however, management strategies will vary according to the presence of RCWs.

Mixed pine stands are stands that mostly composed of species of southern yellow pine with a statistical absence of longleaf pine. Research has indicated that these open pine stands, maintained only with periodic fire, will eventually succeed to a hardwood forest. These stands are primarily made up of loblolly and shortleaf pine mixed with varying degrees of hardwoods (but hardwoods are <29.5% of the stand). These stands will also need to be converted to realize any potential of obtaining the above stated desired future condition. It is expected that Fort Benning will execute many different silvicultural treatments in these stands, in the near future, to obtain the desired future condition. The silvicultural management strategies will vary according to the presence of RCWs. The eventual goal is to convert these stands to a longleaf pine ecosystem that is maintained through uneven-aged management.

As of 3 April 2019, Fort Benning exceeded the recovery population goal for the RCW as outlined in the 2003 RCW Recovery Plan. The USFWS also has recently proposed downlisting the RCW from endangered to threatened. Suitable habitat for the RCW occurs in the open pine stands described above. The goal will be to maintain the current population while also shifting the upland pine stands to obtain the desired future condition of open, longleaf pine stands with sparse mid-story and relatively continuous and rich ground layer. With the majority of these stands requiring mechanical silvicultural treatments, it will be difficult to do the necessary work while maintaining current RCW habitat requirement standards in those stands. Fort Benning is working closely with the USFWS to develop a process to convert stands with the presence of RCWs and result in no adverse impacts on the training mission. The current ecosystem management approach will utilize adaptive management which will allow Fort Benning to convert these stands while minimizing impacts to RCWs and the training mission. Appendix B4 details all management requirements for RCW.

The NRMB manages timber sales with in-house personnel and support from the Real Estate Division USACE, Savannah District. Once the Installation makes the timber available, the USACE is responsible for soliciting bids for each timber sale, conducting an appraisal of timber under advertisement to establish the minimum acceptable bid, and executing the contract administration. Contract administration includes timber harvest coordination with Range Operations, field inspection of harvesting operations,

collection of timber receipts, and transfers of monies to the DoD forestry account. Since the closest Real Estate Division personnel is over 220 miles away, Fort Benning and USACE plan to enter an agreement, established by a MOU, for Fort Benning staff to perform some of the above stated Contracting Officer's Representative duties as well as the traditional duties provided by the Installation for timber disposal (i.e. marking the timber, timber harvest inspections, etc.). A portion of the funds generated from timber sales are returned to the Installation, in part, to continuously fund the timber portion of the Installation's active management of longleaf pine ecosystem.

Table D.8: Fort Benning Forest Type

Forest Type	Dominant Species	Sub-dominant Species	Percent cover
Mixed Pine	*Pinus taeda, Pinus echinata, Liquidambar styraciflua*	*Quercus nigra, Carya spp., Liriodendron tulipifera, Quercus falcate, Pinus virginiana, Pinus elliotti*	21.4% upland
Loblolly Pine	*Pinus taeda, Liquidambar styraciflua, Liriodendron tulipifera,*	*Pinus echinata, Nyssa sylvatica, Quercus nigra, Quercus hemisphaerica, Cornus florida*	9.1% upland
Pine Hardwood	*Pinus taeda, Liriodendron tulipifera, Quercus nigra, Quercus falcata, Carya spp.*	*Liquidambar styraciflua, Pinus echinata, Pinus palustris, Quercus alba*	8.9% upland
Hardwood Pine	*Liriodendron tulipifera, Quercus nigra, Quercus falcata, Quercus alba, Pinus taeda*	*Liquidambar styraciflua, Pinus echinata, Pinus palustris, Carya spp., Nyssa sylvatica*	1.3% upland
Longleaf Pine Plantation	*Pinus palustris*	*Liquidambar styraciflua, Pinus taeda, Quercus hemisphaerica*	31.2% upland
Mixed Pine - Longleaf	*Pinus taeda, Pinus echinata, Pinus palustris, Carya spp.*	*Liquidambar styraciflua, Liriodendron tulipifera, Quercus falcata, Pinus elliotti*	22.9% upland
Longleaf Pine	*Pinus palustris, Pinus echinata, Quercus laevis, Carya spp. Quercus stellata,*	*Pinus taeda, Quercus falcata, Quercus margaretta, Quercus marilandica*	4.4% upland

Camp Merrill

The ecological province unit is the Southeastern Mixed Forest where both pine and hardwood may occur on all landscapes. Pine species are loblolly and shortleaf. Hardwood species are predominantly the dry and dry-mesic oak and hickory species. Relative amounts of each are primarily dependent on disturbance regime (fire,

development, etc.) more than site characteristics. Nevertheless, Camp Merrill has been managed to varying degrees between and encampment and more urban/developed setting over past 50 years lending its forest to being more heavily hardwood dominant.

Management of forest on Camp Merrill consists almost exclusively of maintaining the riparian forests and its shading attributes for the Etowah River. Through the FB-144-R process, proposed actions with disturbances resulting in adverse effects to the Etowah River are identified and potential adverse impacts precluded prior to implementation.

c. Wildland Fire Management

The goal of the Fort Benning Wildland Fire Management program is to provide guidance and direction in the prevention, detection and suppression of wildfires occurring on the woodlands and ranges of the Fort Benning Military Installation while managing for the sustainability and ecological integrity of the Installation's natural resources. Wildfires are fires that occur which are not planned or intentionally set to achieve a desired goal/objective. The Wildfire Management Program also has a goal to protect lives, property, and natural resources from wildfires that occur on Fort Benning lands and contain wildfires within Fort Benning's boundaries, protecting adjacent lands and assets.

Prescribed fires are fires that are planned and intentionally ignited in a knowledgeable manner to manage forests and grasslands in a specific land area under predetermined weather/atmospheric conditions. The NRMB annually completes individual burn plans to accomplish a set of predetermined, well-defined management objectives within burn units of the training areas.

Prior to the enhancement of the Prescribed Burn Program in the mid-1980s, Fort Benning experienced more than 500 wildfire events each year. The goal of the prescribed burn program is to burn all pine dominant habitat every three years to meet established habitat management objectives and regulatory requirements of USFWS Biological Opinions. The prescribed burn program has a target to burn approximately 50,000 acres per year while minimizing any impacts to the training mission and air quality. Since the mid-1990's when the prescribed burning program was implemented, Fort Benning has reduced the average annual wildfire events from 600 to approximately 100 wildfire events per year. Prescribed fire is the primary tool used to manage the vegetation inside RCW clusters and to reduce fuel loading in the upland pine stands which contain virtually all the RCW habitat.

The current workforce of the Fort Benning's NRMB consists of 24 personnel, with 15 assigned in a primary wildfire suppression role and serving in an "on call" status. Each member of the "on call" team is the primary responder to a fire, with duties including initial size-up, assessment, method of attack, and suppression technique. Wildfire detection is the responsibility of the dispatcher. In the absence of the dispatcher, members of an "on call" team rotate in performing dispatcher duties. Other NRMB personnel may also provide assistance as needed.

In an effort to reduce the potential for smoke conflicts and complaints resulting from prescribed fires and training activities, Fort Benning keeps the public informed through the "Smoke and Sound" website. This site is available online at https://www.benning.army.mil/Garrison/Smoke-and-Sound/ and maintained by the Fort Benning Public Affairs Office. Current information is provided and updated almost daily by NRMB and/or Range Control.

The major causes of wildfires at Fort Benning are incendiary training aids (i.e. flares, blanks, simulators, pyrotechnics, smoke grenades, and firecrackers), incendiary ammunition, careless use of cigarettes and matches, improper control of campfires, and incendiary and smoke devices dropped from aircraft. In accordance with MCoE Regulation No. 350-19 (Training Range and Terrain Regulation) Fort Benning's DPW is responsible for notifying Range Division of the fire danger class when drought conditions become very high or extreme. Range Division has the authority to suspend the use of incendiary training aids and ammunition in any training areas/ranges. Although exceptions may be granted to training critical to unit mission, DPW/NRMB will be consulted and notified prior to exceptions for the prevention and suppression of potential wildfires from training events using incendiary training aids and ammunition under such conditions.

The Fort Benning Fire Department has additional resources that can be called upon. The fire department provides support in suppressing fires that occur on roads and highways. Support is also provided on woodland fires located in the cantonment areas and grass or woodland fires located on ranges.

d. Grounds Maintenance

Grounds maintenance is performed by a few different organizations depending on the area of responsibility, but all are ultimately under the leadership of the Garrison Commander. On Fort Benning, the DFMWR conducts the most extensive grounds maintenance program on areas such as the Fort Benning Golf Course. On Fort Benning and Camp Merrill, DPW has the largest grounds maintenance program by maintaining the ranges, landing zones, drop zones, road and trail ROWs, and cantonment grounds. The golf course maintenance, the largest ground maintenance program actively managing insect and disease issues, do not have any non-point source pollution issues. The rest of the organizations provide limited invasive species management and limited insect and disease treatments. All treatments are made to reduce the impacts to non-target organisms; such as pollinators.

e. Agricultural Leases

The NRMB is responsible for all agricultural outleases on Fort Benning; however, there are no plans at the present time to initiate any outleases on the Installation. Notwithstanding, if the agricultural outlease program is reinitiated in the future, the grantee will be required to adhere to all Federal, state, and ARs, as well as all provisions and requirements of this INRMP.

11. Integrated Pest Management

Fort Benning uses IPM to prevent or control pests and disease vectors that have the potential to affect the health of personnel or cause damage to structures, material, or property. Pest control operations are conducted in accordance with an IPM Plan that has been reviewed and approved by U.S. Army Environmental Command (USAEC) pest management consultants and signed by the Garrison Commander. The IPM Plan stipulates the use of sustainable IPM strategies and techniques in all aspects of pest management in order to reduce pest impacts while also minimizing the risk of pesticide exposure to people and the environment. The Installation's IPM Plan is updated annually by an IPM Coordinator and approved by USAEC in accordance with requirements of the DoD Pest Management Program (DoDI 4150.07).

In accord with IPM philosophy, preventive pesticide application is not to be performed. Pest presence must be confirmed by surveillance before a control operation is considered. Notwithstanding, when necessary, pesticides are judicially applied by certified professionals, to control pests in a manner that will minimize pesticide exposure to people and the environment, reduce impacts to non-target organisms (pollinators), and control program expenditures. Proper, prudent, and limited use of pesticides are a part of the comprehensive Fort Benning IPM strategy for ecosystem management across the missionscape. When herbicides are used in close proximity to threatened or endangered species or in habitat utilized by any threatened or endangered species, professional applicators coordinate and work closely with NRMB staff and the USFWS to minimize any risk to any threatened or endangered species.

An abundance of wildlife on the Installation occasionally leads to negative interactions with personnel or property, both within and outside of cantonment areas. The Integrated Pest Management Coordinator maintains and updates as necessary a Vertebrate Pest Control Responsibility Matrix that helps to delineate responsibility for wildlife issues and lists alternative responders in order to provide efficacious resolution to wildlife complaints. NRMB supports the IPM program by providing control of nuisance or diseased wildlife and is typically the first to investigate a wildlife complaint to make a determination as its proper resolution.

The NRMB is tasked with the management of the Installation's forest resources in a manner that sustains both the training mission and the habitat for wildlife. Prescribed fire is the primary IPM method used to manage forests, with mechanical control being the secondary method. Fire serves to reduce fuel load, limit understory competition with preferred species, reduce insect-damage to trees, and facilitate the cycling of nutrients within the system. Forest management requires occasional, professional herbicide application, synergistically combined with prescribed fire, for the typical harvest site preparation to regenerate the forest or to control vegetation that is not effectively controlled with prescribed fire alone. Prior to conducting an herbicide operation, the project is reviewed by the IPM Coordinator to ensure compliance with the IPM Plan and the DoD Pest Management Program.

There are some unique situations that occur on the Installation that require special consideration for herbicide application. Herbicides are not used to enhance the appearance of turf with few exceptions, current examples being the Fort Benning Golf Course; the parade ground (York Field) in front of the MCoE Headquarters; the Soldiers Memorial Park; and the Fort Benning Cemetery. The Installation has several wellfields; used for groundwater extraction and others for groundwater sampling associated with closed landfills or environmental remediation. Although wellfield vegetation is primarily maintained through mowing, limited herbicide application may be permitted as directed and in accordance with the product's label.

12. Noxious Weeds & Invasive Species

Executive Order 13112 of February 3, 1999 amended existing statutes to prevent the introduction of invasive plant and animal species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. Fully addressed in the IPM Plan and in accord with DoDI 4150.07, Fort Benning and Camp Merrill implement a pest management program to control non-native, invasive plant, and animal species. Note that not all non-natives are considered invasive. Since they do not meet the criteria of being classified as "pests" (i.e. having the potential to affect health or cause damage to structures, material, or property), they are not addressed in the IPM Plan.

Although both Fort Benning and Camp Merrill contain a number of invasive plant species, the program's focus is on high priority invasives. As with most invasive plant species throughout the region, recently disturbed and open habitats are highly susceptible for their establishment and rapid growth. Non-native species within training areas are subject to some degree of routine control measures through prescribed fire. Species of invasive plants within cantonment areas are commonly found and without proper control measures may dominate their locations. As a result, the removal of invasive vegetation is typically limited to incidental occurrences (non-chemical) associated with projects or infrastructure improvements. Although the Installations have no cooperative initiatives with outside agencies or organizations to eradicate invasive vegetation, failure to control invasive vegetation within the cantonments is unlikely to have any measurable ecological effect. Nevertheless, if adequate funding and staffing were to be made available, removal of invasive vegetation would provide opportunities to re-establish native vegetation in the cantonment areas.

Of the non-native, invasive animal species that are known to exist on Fort Benning, only feral swine currently requires monitoring and control. Invasive feral swine are a nuisance at Fort Benning, as they damage soil and native vegetation through their rooting behavior and consequently diminish native plant populations. Through an IGSA Partnership with the USDA APHIS, Fort Benning has two full time nuisance wildlife technicians hired to reduce and/or eliminate the feral swine population. Additionally, liberal hunting regulations for the species remain in effect.

13. Wildlife Aircraft Strike Hazard

USDA Animal *and Plant Health Inspection Service Interagency Agreement*
Under the USDA APHIS IGSA mentioned above, Fort Benning assists in reacting to all Wildlife Aircraft Strike Hazard (WASH) incidents. The USDA is authorized to protect American agriculture and other natural resources from damage associated with wildlife. Wildlife service activities are conducted in cooperation with Federal, state and local agencies; private organizations and individuals.

The Wildlife Service program uses an Integrated Wildlife Damage Management approach or IPM in which a series of methods may be used or recommended to reduce wildlife damage. These methods include the alteration of cultural practices as well as habitat and behavioral modification to prevent damage. Nonetheless, controlling wildlife damage may require that the offending animal(s) are lethally removed or that the populations of the offending species be reduced. Wildlife species, such as white-tailed deer and coyotes, can pose a safety hazard to aircraft on LAAF and must be excluded or removed.

The Fort Benning WASH Plan is a comprehensive procedure for LAAF Wildlife Hazard Management. It incorporates provisions of AR 95-2, Air Traffic Control, Airfield/Heliport, and Airspace Operations and IMCOM Pamphlet 385-90-1, WASH Template, dated 19 August 2013. Parties responsible for execution of the plan are the Chief, Airfield Division, and DPTMS.

The objective of this plan is to manage wildlife populations within Fort Benning to reduce associated damages to priority areas. Additionally, working with Fort Benning's NRMB is a key ingredient for successful Wildlife Damage Management Program. This management and financial plan includes two dedicated full-time Wildlife Specialist positions. USDA Wildlife Services will absorb some of the associated equipment and salary costs related to the Program.

Fort Benning's NRMB assists the Chief, Airfield Division by providing the following.

- Advises airfield manager and Wildlife Hazard Working Group on wildlife biology and behavior, habitat requirements, modifications, or management schemes to make informed decisions and minimize aircraft-wildlife strikes.
- Conducts wildlife hazard assessment identifying local wildlife species, numbers, locations, movement, for daily and seasonal occurrences. Develop wildlife hazard reduction recommendations.
- Acquires all necessary state/Federal nuisance wildlife harassment permits and have available upon airfield manager request. (Current permits include Georgia Nuisance Wildlife Control, Georgia Scientific Collection, and Federal Wildlife Control permit as required). Assists with the removal of wildlife from LAAF as needed to lower the risk of hazards to aircraft due to wildlife strike potential.

14. Compatible Use Buffering & Conservation Easements

Fort Benning's ACUB Strategic Plan (ACUB Plan) was approved by Deputy Chief of Staff (Installations), G9 (formerly Office of Assistance Chief of Staff for Installation Management) 18 January 2019. The Plan's changes are substantive in comparison to the original 2006 ACUB Plan and eliminate two of the originally approved Priority Areas (PAs) while expanding the two retained PAs to increase flexibility for Mission requirements. The total PA acreage is 225,000 acres. The total acreage protection goal in PA1, Fort Benning's highest ranked PA, is 60,000 acres while PA2's protection goal is 15,000 acres. There are over 34,000 acres currently protected in PA1 (Figure 3).

a. ACUB Plan Goal

The ACUB Strategic Plan's Goal is Mission Support. The Plan outlines the rationale and approaches to establish an ACUB around portions of Fort Benning, using a combination of no-development easements, conservation easements, and conservation-focused land acquisitions. The buffer lands are intended to facilitate training activities by (1) channeling incompatible growth and development away from critical portions of the Installation boundary, and (2) reducing conflict between Fort Benning's training mission and its environmental stewardship responsibilities, especially for endangered species. Fort Benning's ACUB Proposal was developed with support from The Nature Conservancy (TNC) and other ACUB Partners (see Table D.8) in close partnership with Fort Benning's EMD, DPTMS, Range Division, and SJA. Fort Benning has made a substantial commitment to its ACUB program emphasizing multiple conservation benefits from buffering encroachment to protection and restoration of protected/listed species habitat. In 2009, the Army's Biological Assessment for the MCoE proposed to accelerate the ACUB program at Fort Benning. Similar to ACUB programs established at Fort Bragg and Eglin Air Force Base, Fort Benning began development an initial implementation of a "Red-cockaded Woodpecker off-Post Conservation Plan" as well as a conservation partnership (Chattahoochee Fall Line Conservation Partnership [CFLCP]). This Partnership was established in 2011, and it continues to leverage resources and help develop the science necessary to protect and ecologically connect the buffer lands to Fort Benning.

Table D.9: ACUB Partnerships

Partners	Roles	Responsibilities	Reporting/Contribution
Primary Partners			
The Nature Conservancy	Eligible Entity, Cooperative Agreement Partner, ACUB Landowner, ACUB Easement Holder	ACUB Advisory Board Member	Annual Work Plan Annual Management Report Annual Planning Meeting
Georgia Forestry Commission	Eligible Entity, ACUB Land Owner, ACUB Advisory Board Member	ACUB Advisory Board Member	Annual Work Plan Annual Management Report Annual Planning Meeting
USFWS	Advisory	ACUB Advisory Board Member	Annual Planning Meeting

Partners	Roles	Responsibilities	Reporting/Contribution
Natural Resources Conservation Service	Advisory	ACUB Advisory Board Member	Annual Planning Meeting
Supporting Partners			
Georgia Department of Natural Resources	Supporting	Advisory	NA
Chattahoochee Fall Line Conservation Partnership	Supporting	Advisory	NA
Georgia Alabama Land Trust	ACUB Easement Holder	ACUB Board Member	Annual Work Plan Annual Management Report
River Valley Regional Commission	Supporting	Advisory	NA
University of Georgia, Carl Vinson Institute of Government	Eligible Entity	Advisory	NA
The Longleaf Alliance	Supporting	Advisory	NA

Fort Benning's ACUB program is focused on implementing land protection strategies as presented in the ACUB Plan. Fort Benning ACUB has protected over 34,000 acres around Fort Benning via fee purchase and permanent conservation easement acquisitions by TNC, or other eligible entities, and has a goal of protecting about 75,000 acres (Figure 3). TNC along with partners have ecologically enhanced over 29,000 acres by applying appropriate restoration and management techniques, such as prescribed fire and ecological timber harvest. While TNC is granted considerable latitude in reconnaissance and preliminary landowner contacts for potential ACUB projects, the responsibility to recommend projects for ACUB funding lies with an ACUB Implementation Review Team consisting of representatives from Fort Benning's DPTMS, EMD, DPW, Plans Analysis and Integration Office (PAIO) and SJA. Recommendations will be made to the Garrison Commander, and will be informed by TNC's best available information on opportunity, leveraged funding, training benefit, conservation value, and the priority guidelines described below. Review of overall ACUB implementation success by the DA's ACUB Program management staff will be conducted annually, with a periodic in-depth In-Progress-Review (IPR) on-site.

b. Prioritization

The two priority areas (PA) provide opportunities to prevent or divert encroaching incompatible land use, and/or to protect, secure, or restore habitat that will ultimately benefit Fort Benning's training mission. As illustrated in Figure 3, PA1 is highest priority and represents the intersection of the No Development Zone with the northeast Fall-Line corridor. Proximity to Hastings Range, likelihood of development associated with the Fall Line Freeway, and Fall Line habitat potential for endangered species combine to make it high priority. This zone also offers opportunities to secure Gopher Tortoise viability, watershed protection, RCW viability, and other Fall Line conservation targets. It ranks highly also because of significant funding leverage available from conservation partners interested in protecting rare plant and animal communities in this area. PA2 is

also the second priority and represents a primary focus on deferring incompatible development. Other site-level prioritization efforts are developed and being utilized to guide the ACUB program.

c. Progress & Future of the ACUB Program

The following summarizes the progress of the ACUB program from FY 2001-2020, and the plan for FY21-26. Fort Benning, the Army and the DoD Readiness and Environmental Protection Integration Office have obligated nearly $80M to implement ACUB strategies. Majority of the funds were from Army sources. TNC, Georgia DNR and the CFLCP Partners have contributed over $25M in partner-share via grants and donations, and continue to increase contributions. Over the past 5 years, partner funding has accounted for over 50% of the total investment in the ACUB Program.

Fort Benning's ACUB program has protected over 34,000 acres, with 85% in fee ownership by TNC and the State of Georgia, and the remaining with permanent conservation easements. TNC, Georgia DNR and the CFLCP have scaled up restoration and management of ACUB lands. Over 3,000 acres of longleaf has been planted, 1,000 acres of sand pine removed, significant mid-story work and timber thinning is ongoing, approximately 5,000 to 8,000 acres are being burned annually, and various understory restoration projects are underway. The timeline provided here begins with the identification of encroachment threats. Going forward, annual reviews and evaluation of current implementation priorities coupled with annual planning drive stewardship activities in the landscape.

Fort Benning is working with TNC to protect and additional 12,000 acres by 2026. All targeted parcels would further mitigate incompatible development encroachment and strengthen connected corridors with existing protected ACUB lands; and, some properties would provide additional species mitigation credits. The highest priority parcel is the Timberlands II tract in Marion County. This 4,700 tract is immediately adjacent to Fort Benning and would buffer Camp Darby and essential training lands for 4th RTB, as well as the southern extent of the MOA off-Post. Fort Benning and the ACUB Partners are working to secure approximately $11M in funding in FY21 & FY22 for protection of this property.

Fort Benning has secured all funding needed to fund the endowment for stewardship, in the Army's interest, on all fee-owned lands currently held and managed by TNC and DNR. Fort Benning is pulling together final requirements and will complete Tier 2A consultation with USFWS in FY21. This consultation will explicitly define the RCW and gopher tortoise credits available on ACUB properties owned by TNC and DNR. Initial calculations indicate 59 RCW Potential Breeding Group Credits being available. Gopher tortoise credits are still being calculated. Once consultation is complete and credits are formally defined, Fort Benning will be able to use those credits as mitigations to off-set impacts from Mission requirements on-Post by debiting from that available credit base. Future consultations on debiting from the available credits should be completed in less than three months and afford opportunities to increase Mission flexibility through a more streamlined and timely process.

E. THE SUSTAINABLE RANGE PROGRAM

The Sustainable Range Program (SRP) is the Army's overall approach for improving the way in which it designs, manages, and uses its ranges to ensure long-term sustainability. The SRP goal 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 SRP is defined by its core programs, the Range and Training Land Program and the ITAM Program, which focus on the doctrinal capability of the Army's ranges and training land.

1. Range & Training Land Program

The Range and Training Land Program planning process integrates mission support, environmental stewardship, and economic feasibility and defines procedures for determining range projects and training land requirements to support live-fire and maneuver training. The planning process occurs through the Range Complex Master Plan (RCMP) on an annual basis to ensure that any changes in mission or management conditions are identified and incorporated into the goals and objectives of the ITAM annual workplan.

2. Integrated Training Area Management Program

ITAM is a core component of the SRP and is responsible for maintaining training land to help the Army meet its training requirements. The foundation to the success of the Installation ITAM program lies in successfully identifying mission-based goals, the analysis of land conditions that need improvement or management to achieve the mission goal, and the development of management prescriptions, or “objectives” needed to address the landscape condition. The ITAM Workplan provides a complete overview of training assets under the responsibilities of the ITAM program and the activities required to maintain a sustainable training environment.

ITAM’s mission is to meet the Senior Commander’s training needs for accessibility and sustained use of training lands utilized for military maneuver exercises in preparation of real world missions. ITAM’s goal is to ensure training lands have availability, accessibility, and capability to safely support the training and maneuver needs at Fort Benning. ITAM maintains the live maneuver training environment and sustains the Army’s live training capability by repairing maneuver damage and creating a resilient and resistant training land base. ITAM fundamentally supports Installation compliance with the Sikes Act and is a critical component of Installation natural resource management. The ITAM program essentially acts as an ongoing mitigation program for maneuver training activities that minimizes the conflicts between force readiness and environmental stewardship.

To accomplish this mission, ITAM relies on its five components and management by HQDA, ITAM Lead Agent, Army Execution and Supported Commands, and installations. The five components of ITAM include:

- Training Requirements Integration (TRI)
- Range and Training Land Assessment (RTLA)
- Land Rehabilitation and Maintenance (LRAM)
- SRP GIS
- Sustainable Range Awareness (SRA)

The purposes of the ITAM program components are to integrate mission requirements with environmental management practices and establish the policies and procedures to achieve sustainable use of training and testing lands to support mounted and dismounted live training events. These components provide an understanding of how the Army's training requirements impact land management practices, what the impact of training is on the land, how to mitigate and repair impacts, and communicate training land stewardship to Soldiers.

Training Requirements Integration
TRI provides trainers and range managers with technical information to balance training needs with land constraints. The integration of training and environmental requirements occurs through continual coordination among the DPTMS, Natural and Cultural Resources managers, and other environmental programs such as the NEPA. TRI facilitates achieving mission goals through decision support and coordinating training needs with other installation plans to provide information and analysis that assist with range and training land planning, scheduling, maintenance and modernization.

TRI is most effective when training and environmental requirements are balanced in the decision-making process. Information is obtained from LRAM, Range and Training Land Assessment (RTLA), SRP GIS, and other Installation offices that support training land management decisions through the analysis of range facility requirements and landscape condition requirements in accordance with environmental compliance requirements. This necessitates the integration of the RCMP mission goals and objectives into the INRMP and its subordinate management plans to include:

- SMCs
- Integrated Wildland Fire Management Plan (IWFMP)
- Forest Management Plan
- Wildlife Management Plans

Other important Installation Plans include the Installation Real Property Master Plan (RPMP), the ICRMP), the IPM Plan, and the ACUB Program. TRI is a continual collaboration with the Installation's Range Operations, NRMB, EMD, and state and Federal agencies.

Range and Training Land Assessment
The focus of RTLA is to provide information that supports land management decisions for sustained mission use. RTLA collects data to monitor and assess maneuver and training load impacts under normal and surge conditions, and supports range operations

and modernization planning based on mission needs. RTLA information is used to make recommendations that enhance training land capacity, capability, and condition and to help prioritize land rehabilitation, maintenance, and reconfiguration activities.

RTLA is the component of the ITAM program that collects, inventories, monitors, manages, and analyzes tabular and spatial data concerning land conditions on Fort Benning. The RTLA component may include a mix of inventory and monitoring techniques customized to the Installation's natural setting and training mission. RTLA annually conducts surveys to document disturbances to soils and vegetation in areas impacted by military training. Through a regular program of monitoring and maintaining awareness of training land conditions, ITAM personnel can repair maneuver damage when and where it is most needed before conditions become safety issues, or require costly engineering solutions.

The RTLA component incorporates relational databases and GIS to support the land use planning decision process, including the location and timing of training events, natural resource management, and prioritization of land rehabilitation and restoration. RTLA data is used to identify LRAM projects, ensure that biological considerations are part of the LRAM project prioritization process. RTLA data will also determine the effectiveness of LRAM projects, and facilitate recommendations for training load distribution so that the sustainability of the training land can be maintained.

Land Rehabilitation and Maintenance
LRAM is the primary program for repair and rehabilitation of training lands within ITAM. LRAM consists of strategies and resource allocations for resting and repairing the soils on training lands on a rotational basis as well as repairing other problem erosion areas as the need arises. LRAM includes programming, planning, designing, and executing land rehabilitation and maintenance projects based on requirements and priorities identified by the TRI and RTLA components of the ITAM program.

LRAM uses land management practices and support from RTLA to enhance safety and training value of the land by minimizing adverse impacts while meeting maneuver training requirements. LRAM is a preventative and corrective land rehabilitation and maintenance procedure that reduces long-term installation training and testing impacts. It mitigates training and testing effects by combining preventive and corrective land rehabilitation, repair, and/or maintenance practices. ITAM also includes training area redesign and/or reconfiguration to meet training requirements. LRAM projects stabilize soils and manage vegetation to maintain, repair, and reconfigure areas that support Army training and testing missions. Reconfiguration projects include development of artillery firing points, mortar firing points, helicopter landing zones, tactical use movement and maneuver trails, off-road heavy maneuver training areas, bivouac sites, observation points, and land navigation courses. The LRAM component is the primary ITAM effort in achieving and sustaining a realistic live training environment. LRAM is all the planning and projects necessary to keep land usable for live training. LRAM projects are designed to:

- Address safety hazards and repair training damage on maneuver land

- Maintain training lands that receive regular use, and require maintenance to maintain operational conditions
- Reconfigure existing lands to optimize their availability for a variety of live training uses

LRAM mitigation practices include the installation of regulatory approved BMPs to comply with the Clean Water Act. LRAM BMPs are commonly modified to meet the Installation site conditions such as training loads and weather events. LRAM BMPs are implemented primarily in accordance with the GSWCC's Manual for Erosion and Sediment Control. BMPs implemented include vegetative measures and structural practices to stabilize soil, control erosion, and minimize sedimentation. The overall soil conservation strategy is to repair and improve training lands by planning and applying preventative and corrective land management practices that address erosion and damage caused by military training.

BMPs related to soil stabilization, erosion control, and repairs include the grading/leveling of ruts, rills, and uneven terrain to maintain smooth, stable surfaces, as well as overlaying the areas with grass mats, wheat straw, and grass seed along with silt fencing or other additional BMPs when needed. In instances where gullies may have formed, soil stabilization efforts will include the placement and compaction of rock. To minimize sediment run-off, rip rap rock filter dams (i.e. "check dams") will be installed where needed and monitored for repairs and maintenance on a monthly basis. LRAM vegetation management and control techniques include the use of rotary mowers, bush hogs, tree cutters, forestry mulching machines, site preparation equipment, roller choppers, chainsaws, miscellaneous hand tools, tree stump grinders, and the use of herbicide when deemed absolutely necessary. The types of machinery used and desired end-state will be dependent upon the size of the area to be maintained and land use designation, as landing zones require more stringent vegetation height controls for safety reasons than maneuver areas.

SRP GIS

The SRP GIS is a foundational support element to the entire SRP. The SRP GIS mission is to create, analyze, manage, and distribute authoritative standardized geospatial information, products, and services for the execution of training strategies and missions on Fort Benning ranges and training lands. Through information excellence, one of the three tenets upon which the SRP was founded, the SRP GIS Program strives to provide the SRP community, trainers, and Soldiers with the ability to leverage the most accurate and complete datasets through easily accessible and user-friendly products and applications.

SRP GIS incorporates geography, cartography, imagery processing, spatial analysis, database administration, and database development to provide geospatial mapping and analysis to support range operations and scheduling, range development and modernization, and ITAM land management decisions while concurrently considering environmental compliance requirements. Coordination between ITAM, EMD, and NRMB is essential in developing and maintaining GIS databases to integrate the Army Mission

and natural resource management. The SRP utilizes GIS mapping capabilities for daily decisions and long-term planning for ITAM maintenance activities and natural resource management activities that promote the conservation and sustainability of Fort Benning's natural resources.

Sustainable Range Awareness
Fort Benning's mission requires thousands of individual Soldiers and civilian employees to train and/or travel over most of the Installation's 182,000 acres. The SRA program provides a proactive means to develop and distribute educational materials that provide information and reporting procedures to Soldiers and civilians. Individuals on the Installation need to understand the safety and environmental considerations associated with their training and/or work activities within the locations where these activities are performed. As part of the SRA program, Fort Benning has developed a "Soldier Field Card" which includes information related to Range Operations administrative support and reporting, as well as health, safety, and medical/emergency evacuation procedures. In addition, the Soldier Field Card includes information regarding the presence and identification of Threatened and Endangered Species (TES), and Species-at-Risk or of Conservation Concern; training restrictions associated with RCWs and GTs; recognizing marked "Off-Limits" areas where training activities are limited; and reporting procedures for POL/HAZMAT Spills, and other environmental incidents. The purpose of the Soldier Field Card is to promote environmental awareness in avoiding sensitive natural resources, and to reduce the potential for impacts on ranges and training lands during military exercises. The Soldier Field Card is reviewed annually by Range Operations, NRMB, and EMD to ensure the information is accurate, and is updated accordingly.

Other efforts for environmental awareness include monthly Range Safety Officer Courses offered by Range Operations personnel, and the monthly Land Integration Meeting conducted by DPTMS that assembles representatives from Fort Benning's tenant units, EMD, NRMB, Master Planning, and Range Operations to coordinate and inform personnel of all activities and projects that affect training. These two monthly events provide an opportunity to communicate current and developing environmental considerations and training requirements.

3. Project Approval, Environmental Coordination, & Compliance Procedures

This INRMP offers a coordinated approach for incorporating wildlife and habitat conservation efforts into Installation management. As such, natural resources activities must be properly planned, coordinated, and documented using NEPA. Implementation of DoD INRMPs require preparation of NEPA documentation per the Code of Federal Regulations (32 C.F.R. 651), "Environmental Analysis of Army Actions", herein referred to as "The Army NEPA Regulation". Incorporation of ITAM's goals and objectives from the annual workplan into the INRMP provides NEPA coverage for the potential impacts from ITAM activities.

All natural resources management activities are considered and implemented according to the requirements of NEPA. The NEPA Program Manager will compile the results of all environmental impact analysis for the management activities identified in this INRMP

and have the responsibility for determining the appropriate level of NEPA documentation. In accordance with the Army NEPA Regulation, development and implementation of an INRMP requires an EA, at a minimum. As the primary intent of the INRMP and the ITAM program is to promote conservation efforts and sustainability, it is not anticipated that the actions associated with the INRMP or ITAM program will have an adverse effect on the environment. Therefore, an EA would be the appropriate level of NEPA documentation for the INRMP. Inclusion of the ITAM work within the INRMP will allow that EA to cover the associated ITAM work as well.

Fort Benning's ITAM program actively incorporates environmental considerations in a manner consistent with the Army NEPA Regulation. Because the activities of the ITAM program are repetitive (e.g. monthly, bi-monthly, or quarterly), they require frequent coordination with Range Operations, NRMB, and EMD. This includes an annual submittal of the ITAM Workplan to EMD through the NEPA review process with a "Request for Environmental Analysis", FB-144-R. This ensures that all ITAM projects and maintenance activities are coordinated with Fort Benning's EMD for compliance with NEPA, Clean Water Act, TES Regulations, and Cultural Resources Regulations, and identifies the need for any supplemental regulatory documentation (e.g. wetlands permitting, Stormwater Prevention Plan, etc.) If no significant impacts are identified through the FB 144-R review, then a REC is prepared documenting the appropriate Categorical Exclusion thus completing the NEPA review and ITAM activities can be implemented.

Due to the evolving needs of the Army to accomplish its training mission and potential changes in environmental regulations, instances may arise where natural resource management activities could be identified that are not part of this INRMP or ITAM annual workplan. Any significant change in mission or regulatory requirements that influence natural resource management will be analyzed under Fort Benning's NEPA review process, and will be incorporated into the INRMP through its annual internal review as required by DoD policy (DoDI 4715.03). Additionally, pursuant to the Sikes Act, the INRMP is required to undergo external stakeholder review (i.e. USFWS and appropriate State fish and wildlife management agencies), every five years, and be updated or revised as necessary based on the results of these reviews. These measures will ensure that Fort Benning is in compliance with applicable Federal regulatory requirements.

4. Summation of ITAM Workplan Activities & Objectives

The ITAM Workplan is updated annually and submitted to IMCOM for validation, and then to the Army Training and Doctrine Command Capability Manager (TCM) for approval and funding. As a component of Fort Benning's RCMP, the Workplan develops and documents land management objectives that address specific landscape conditions and mission requirements by identifying maintenance, repair, and reconfiguration projects in support of military training. Training assets included in the ITAM Workplan consists of maneuver trails, artillery firing points and observation positions, helicopters landing/pick-up zones (LZs), bivouac sites, and off-road maneuver areas to support light, wheeled vehicles and heavy, tracked vehicles. Maintenance and repair activities

for firing ranges and Airborne drop zones are under the responsibility of the DPW and Real Property.

ITAM maintenance and repair activities for most training assets are conducted on a prescribed schedule throughout the year. Nevertheless, depending on the operational training tempo, weather events, and site conditions, ITAM's maintenance, repair, and reconfiguration efforts may need to be implemented on a more frequent basis. Soil stabilization and erosion control, and vegetation control and removal are the primary focus of ITAM activities to support the sustainability of training lands. Heavy maneuver areas and trails require a more intensive application of soil stabilization and erosion control, and at times also require large scale reconfiguration efforts to support tracked vehicle training. All ITAM maintenance, repair, and reconfiguration activities are done in accordance with the specifications detailed in the Field Manual for Erosion and Sediment Control in Georgia as published by the GSWCC, and are monitored regularly for effectiveness and scheduling of maintenance and repairs.

Heavy, off-road maneuver training areas consist of the Good Hope Maneuver Training Area (GHMTA) and the Northern Mounted Maneuver Training Area (NMMTA) with 2,729 acres and 198 acres (respectively) of open, free off-road maneuver capabilities. There are also two smaller heavy maneuver corridors at Bush Hill (42 acres) and Cactus Range (55 acres). These open, heavy maneuver areas regularly require reconfiguration in addition to maintenance and repairs due to the intensity of training, and the natural erodibility of soils on Fort Benning. Landscape reconfiguration efforts are executed through the application of rip rap and surge stone to fill ruts, rills, and gullies, and grading to maintain smooth and stable surfaces. Additional efforts to minimize sediment run-off and soil stabilization include the installation of rip rap rock filter dams, grass mats, wheat straw, grass seed, and silt fences or other appropriate erosion prevention BMPs in areas where the need is identified.

To support the sustainability of heavy, off-road maneuver training, the GHMTA and NMMTA have other constructed design features such as low water crossings (LWC) that have associated sediment control features that require regular maintenance and repairs. To prevent sedimentation of surface waters and wetlands, LWC approaches include sediment control structures that consist of water bars, rock filter dams, and turnouts. These areas may also require the application of rip rap, surge stone, and road construction material such as graded aggregate base for soil stabilization, and vegetative controls such as grass mats, wheat straw, and/or seeding to minimize erosion.

In addition to vegetative measures to control erosion, other activities are implemented to prepare and maintain the usability of the training landscape. Recent improvements, expansions, and enhancements to off-road maneuver areas, construction of additional LWCs, artillery firing points, and LZs have required timber harvest operations and controls for vegetation encroachment. For initial development of training assets, newly harvested timber locations include stump grinding, harvest debris piling and removal, and grinding debris from timber harvest operations through the use of logging

equipment for site preparation such as fellers, skidders, loaders, and roller choppers. Stump grinding may also be needed in established training areas if there are areas that may pose safety hazards to personnel and equipment if not removed. Vegetation control measures for encroachment and maintenance for training safety include the use of rotary mowers, bush hogs, mulching machines, chain saws, and various other hand tools. In very limited instances, pesticides may be used for vegetation encroachment issues.

Maneuver trails not within the established heavy maneuver areas are utilized primarily by light and wheeled tactical vehicles, and consists of approximately 255 acres. Maintenance of maneuver trails consists of the application of stone and/or rock as needed to maintain level tactical training surfaces through compaction and minor grading. Also associated with maneuver trails are various sediment control features that require regular repairs and maintenance. Sediment control features include check dams, rock filters, and silt fencing, and some areas adjacent to maneuver trails may require vegetative cover applications to control erosion.

Maintenance activities at LZs (480 acres), artillery firing points (350 acres), observation positions (16 acres), and bivouac sites (330 acres) primarily consist of vegetation controls. Nonetheless, when instances of erosion may occur due to training activities or weather events, soil stabilization and erosion control measures will be implemented as needed. Vegetation and erosion control, and soil stabilization measures will be consistent with those previously discussed in the maintenance and repair activities conducted in heavy maneuver areas and on maneuver trails, as well as the activities associated with the enhancement and development of supplemental training assets.

The ITAM Workplan is submitted annually to Fort Benning's EMD through the NEPA review process for coordination with environmental staff, NRMB, and DPW. Any projects and/or maintenance activities needed, and not identified within the current Workplan for that fiscal year, are submitted separately to EMD for NEPA review, coordination, and compliance with applicable environmental regulations. Annual updates to the ITAM Workplan and submission for IMCOM, TCM, and EMD/DPW review ensure that all new projects and on-going mission activities that may impact natural resources and training needs are coordinated with the appropriate external and internal agencies, and support training needs to the fullest extent.

F. IMPLEMENTATION

1. Environmental Awareness

Fort Benning's environmental awareness training provides Soldiers, civilian workers, recreationists, and the general public with insights into the Installation's natural resource management, environmental successes, and challenges. Many environmental and compliance efforts at Fort Benning are implemented directly by trained representatives within military units, Garrison directorates, and contractor organizations through a system of additional duties and roles. These additional duties and corresponding training are defined within AR 200-1, by the Installation's Hazardous Waste Management Plan, Spill Prevention Control and Countermeasures Plan, and by its National Pollutant Discharge Elimination System Industrial and Municipal Separate Storm Sewer System Permits. Duties and applicable training are outlined in Table F.1.

Table F.1: Environmental Representatives & Responsibilities

Role	Duties
Senior Environmental Compliance Officer (SECO)	• Responsible for overall environmental compliance, as representative of commander; sets policy; generates appointment orders; supports program • Represents: Regiment, Brigade, Battalion, Squadron or similar-sized military unit; Garrison Directorate, Division or large contractor organization • Rank Required: Field Grade Officer; General Service (GS) or contractor equivalent
Environmental Compliance Officer (ECO)	• Responsible for overall environmental compliance, as representative of commander; generates appointment orders; ensures required manpower and supplies • Represents: Company, Troop, Battery or similar-sized military unit; Garrison Branch or similar contractor organization • Rank Required: Officer, Warrant Officer, or Non-commissioned Officer (NCO); GS or contractor equivalent
Environmental Compliance Officer (ECO)	• Supervises day-to-day environmental compliance work; trains; implements; manages; inspects; coordinates • Rank Required: NCO; GS or contractor equivalent
Storm Water Activity Coordinator (SWAC)	• Manages regulated facility; inspects; maintains supplies; keeps records
Hazardous Waste Manager (HWM)	• Manages hazardous waste accumulation areas; inspects; maintains supplies; keeps records

Annual outreach activities include the Hunting, Fishing, and Recreation Open House and Help The Hooch-Rivers Alive Trash Clean-Up Event. The Open House is held annually each August and provides the Fort Benning Community an informative introduction to the regulations for on-Post hunting and fishing opportunities. Help the Hooch is held each October as a partnership between Fort Benning's EMD, Columbus Water Works, and Keep Columbus Beautiful. With more than 20 cleanup locations, the Help The Hooch takes place both on and off-Post to remove tons of trash from the Chattahoochee River and adjacent tributaries.

2. Natural Resource Staff & Training

The NRMB is staffed with 24 GS natural resources professionals, including one Branch Chief, two Section Chiefs, four wildlife biologists, five wildlife technicians, four foresters, a GIS Forester, four forestry technicians, an operations specialist, and a soil conservationist, which is sufficient for compliance with the Sikes Act and performance of tasks outlined within this INRMP. Additionally, two professionally trained GS natural resources law enforcement officers operate under the authority of the Directorate of Emergency Services. This NRMB may also receive outside support through agreements with Oak Ridge Institute for Science and Education, USDA APHIS, TNC, and Auburn University (i.e. IGSA).

3. Funding

Projects or purchases of equipment that require the use of QMUN (i.e. an Army fiscal code) DPW funds are entered by line item in the DPW spend plan each year. The requirements are reviewed and validated by IMCOM G4. All wildland fire equipment under the $250K threshold are purchased with QMUN funds.

Large equipment purchases and centrally managed vehicles are purchased with Other Procurement Army (OPA) funds for Table of Distribution and Allowances (TDA) authorized equipment. Equipment purchases requiring OPA funds are submitted each year on data calls for Base Commercial Equipment (BCE) and centrally managed vehicles. IMCOM G4 Logistics reviews each submitted requirement and ranks all equipment for OPA funding. OPA funding for BCE is sent to the Installation for execution of the purchase and Tank-automotive and Armaments Command or TACOM procures all centrally managed vehicles with OPA funds for the Installation. Forestry reimbursable funds can also be used for all equipment purchases to include centrally managed equipment when funds are available and the equipment is for a forestry program use. Similar to forestry equipment purchases, fish and wildlife funds can be used where the equipment is required for game animal conservation and management.

All of Fort Benning Natural Resources pay is funded by VENQ (i.e. Army environmental fiscal code) and QMUN Management Decision Evaluation Packages (MDEP). VENQ is the primary source of payroll funding for most natural resource activities. QMUN is used for firebreak maintenance and prescribed burning where the objective is primary fuel reduction for range wildfires or to control range wildfires fires by maintaining firebreaks. VENQ funding is provided by modeled TDA authorizations and QMUN funding is

provided by yearly request based upon estimations for cost under QMUN. Funding is broken down in the Automated Time Attendance and Production System so that Natural Resources personnel can report their time to the proper cost center.

Under the provisions of the Anti-Deficiency Act, all requirements set forth in this Agreement requiring the expenditure of Army funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. Section 1341). No obligation undertaken by Fort Benning under the terms of the Agreement shall require or be interpreted to require a commitment to expend funds not appropriated for a particular purpose. If Fort Benning cannot perform any obligations set forth in this Agreement due to the unavailability of funds, Fort Benning and the other signatory agencies intend for the remainder of the Agreement to be executed. Any obligation under the Agreement which cannot be performed due to the unavailability of funds must be renegotiated between Fort Benning and the signatory agencies.

G. ANNUAL MANAGEMENT PLAN

Table F.1: Annual Management Plan

Management Activity	OCT					NOV				DEC				JAN					FEB				MAR				APR					MAY				JUN				JUL				AUG				SEP				Driver (e.g. law, regulation, or agreement)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
Georgia Rockcress Survey																																																				Endangered Species Act of 1973 (2004 ESA Amendment)
Georgia Rockcress Monitoring (triennially, FY22)																																																					Endangered Species Act of 1973 (2004 ESA Amendment)
Relict Trillium Annual Survey																																																				Endangered Species Act of 1973 (2004 ESA Amendment)
Gopher Tortoise Distance Survey																																																				Candidate Conservation Agreement for the Gopher Tortoise 2008, Management Guidelines for The Gopher Tortoise on Army Installations 2008
Nuisance Wildlife Response																																																				SIKES Act of 1960 (As Amended)
Spring Cluster Cavity Inspections & Monitoring																																																				Endangered Species Act of 1973 (2004 ESA Amendment)
A20 Cavity Maintenance																																																				Endangered Species Act of 1973 (2004 ESA Amendment)
Cluster Cavity Maintenance																																																				Endangered Species Act of 1973 (2004 ESA Amendment)
A20 Nest Monitoring																																																				Endangered Species Act of 1973 (2004 ESA Amendment)
RCW Nest Monitoring																																																				Endangered Species Act of 1973 (2004 ESA Amendment)
Burn Plans																																																				Endangered Species Act of 1973 (2004 ESA Amendment)
Forest Health Monitoring																																																				Executive Order 13751 Safeguarding the Nation From the Impacts of Invasive Species
Fire Break Maintenance																																																				Executive Order 13751 Safeguarding the Nation From the Impacts of Invasive Species
Bald Eagle Monitoring																																																				The Bald and Golden Eagle Protection Act of 1940 (2008 Amendment)
Eagle Mid-Winter Survey																																																				The Bald and Golden Eagle Protection Act of 1940 (2008 Amendment)
Cogon Grass Survey																																																				Executive Order 13751 Safeguarding the Nation From the Impacts of Invasive Species
Kudzu Survey/Control																																																				Executive Order 13751 Safeguarding the Nation From the Impacts of Invasive Species
Forest Inventory																																																				Endangered Species Act of 1973 (2004 ESA Amendment)

Management Activity	Driver (e.g. law, regulation, or agreement)
Timber Prescription	Endangered Species Act of 1973 (2004 ESA Amendment)
Timber Sale Administration	SIKES Act of 1960 (As Amended)
Longleaf Growth and Yield Data Collection	SIKES Act of 1960 (As Amended)
Cantonment Archery Briefs & Qualifications	SIKES Act of 1960 (As Amended)
Hunting, Fishing, Recreation Open House	SIKES Act of 1960 (As Amended)
Deer Check Station	SIKES Act of 1960 (As Amended)
Dove Field Plow/Mow Prep	SIKES Act of 1960 (As Amended)
Dove Field Planting & Spraying	SIKES Act of 1960 (As Amended)
Wildlife Opening Prep Plowing	SIKES Act of 1960 (As Amended)
Wildlife Opening Planting	SIKES Act of 1960 (As Amended)
Fish Pond Fertilizing	SIKES Act of 1960 (As Amended)
Kids Fish Pond Feedings	SIKES Act of 1960 (As Amended)
Feral Swine Trapping	SIKES Act of 1960 (As Amended)
Horse Pasture Herbicide	Integrated Pest Management Plan (Garrison Request)
Erosion Control Projects	The Clean Water Act of 1972, Georgia Erosion and Sedimentation Act of 1975
Fish Pond Sampling	SIKES Act of 1960 (As Amended)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
OCT					NOV				DEC				JAN					FEB				MAR				APR					MAY				JUN				JUL					AUG					SEP				

APPENDIX A: ACRONYMS & REFERENCES

A.1: Acronyms

ACUB	Army Compatible Use Buffer
ACSIM	Assistant Chief of Staff for Installation Management
ADCNR	Alabama Department of Conservation and Natural Resources
ADEM	Alabama Department of Environmental Management
AEC	Army Environmental Command
AR	Army Regulation
BCE	Base Commercial Equipment
BMP	Best Management Practices
BO	Biological Opinion
BRAC	Base Realignment and Closure
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act
CFLCP	Chattahoochee Fall Line Conservation Partnership
C.F.R.	Code of Federal Regulations
CLEP	Conservation Law Enforcement Program
CLEO	Conservation Law Enforcement Officer
CRD	Community Recreation Division
CWA	Clean Water Act
DES	Directorate of Emergency Services
DFC	Desired Future Conditions
DFMWR	Directorate of Family, Morale, Welfare and Recreation
DMPRC	Digital Multi-Purpose Range Complex
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoDM	Department of Defense Manual
DPTMS	Directorate of Plans, Training, Mobilization, and Security
DPW	Directorate of Public Works
DNR	Department of Natural Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMD	Environmental Management Division
EMS	Environmental Management System
EO	Executive Order
EOD	Explosive Ordnance Detachment
EPAS	Environmental Performance Assessment System
USEPA	Environmental Protection Agency
EPD	Environmental Protection Division
ESA	Endangered Species Act (1973)
SMC	Species Management Component
ESPCP	Erosion, Sedimentation and Pollution control Plan
°F	Degrees Fahrenheit
FB	Fort Benning

144R	(Fort Benning's) NEPA Process Form
FEMA	Federal Emergency Management Agency
FONPA	Finding of No Practicable Alternative
FORSCOM	Army Forces Command
GHMTA	Good Hope Maneuver Training Area
GIS	Geographic Information Systems
GS	General Service (Employee)
GSWCC	Georgia Soil and Water Conservation commission
HQDA	Headquarters, Department of the Army
ICRMP	Integrated Cultural Resources Management Plan
IGI&S	Installation Geospatial Information & Services
IGSA	Intergovernmental Service Agreement
IMCOM	Installation Management Command
INRMP	Integrated Natural Resource Management Plan
IPM	Integrated Pest Management
IT	Incidental Take
ITAM	Integrated Training Area Management
LAAF	Lawson Army Airfield
LRAM	Land Rehabilitation and Maintenance
LWC	Low Water Crossing
LZ	Helicopters Landing/Pick-Up Zone
MBTA	Migratory Bird Treaty Act
MCoE	Maneuver Center of Excellence
MICC	Mission and Installation Contracting Command
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NCO	Non-commissioned Officer
NEPA	National Environmental Policy Act
NMMTA	Northern Mounted Maneuver Training Area
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRMB	Natural Resources Management Branch
NWI	National Wetlands Inventory
OPA	Other Procurement Army
PA	Priority Area
PAIO	Plans Analysis and Integration Office
PBG	Potential Breeding Group
RCMP	Range Complex Master Plan
RCA	Radiological Contaminated Area
RCW	Red-Cockaded Woodpecker
REC	Record of Environmental Consideration
RPMP	Real Property Master Plan
RTLA	Range and Training Land Assessment
SCP	Soil Conservation Program
SDSFIE	Spatial Data Standards for Facilities, Infrastructure, and Environment

SJA	Staff Judge Advocate
SOCOM	Special Operations Command
SAR	Species at Risk
SRA	Sustainable Range Awareness
SRP	Sustainable Range Program
TCM	Training and Doctrine Command Capability Manager
TDA	Table of Distribution and Allowances
TES	Threatened and Endangered Species
TMDL	Total Maximum Daily Loads
TNC	The Nature Conservancy
TRI	Training Requirements Integration
UEA	Unique Ecological Area
USACE	United States Army Corps of Engineers
USAIC	United States Army Infantry Center and School
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UXO	Unexploded Ordnance
VENQ	VENQ: Army fiscal code for designating environmental program resources
WASH	Wildlife Aircraft Strike Hazard
WHINSEC	Western Hemisphere Institute for Security Cooperation
WOUS	Waters of the United States
WMU	Watershed Management Unit

A.2: References Cited

Brim-Box, J. and J. D. Williams. 2000. Unionid mollusks of the Apalachicola Basin in Alabama, Florida, and Georgia. Bulletin of the Alabama Museum of Natural History 21, 143 p.

Camp Merrill. 1996. Closure/Post- Closure Plan, Landfill No. 6, Camp Frank B. Merrill, Lumpkin County, Georgia, 15 September.

Clench, W. J., R. D. Turner. 1956. Freshwater mollusks of Alabama, Georgia, and Florida from the Escambia to the Suwannee River. Bulletin of the Florida State Museum 1(3): 97-239.

Cooke, C. W. 1943. Geology of the Coastal Plain of Georgia. U.S. Geological Survey. United States Government Printing Office. 1943.

DoD. 2011. Natural Resources Conservation Program, Instruction Number 4715.03. Secretary of Defense, Washington, D.C. 18 March 2011.

DoD. 2013. DOD Instruction 4715.03-Integrated Natural Resources Management Plan Implementation Manual. 2013.

FEMA. 2010. FEMA Publication 1. Washington D.C. November 2010.

Florida Fish and Wildlife Conservation Commission. 2021. Retrieved from: https://myfwc.com/wildlifehabitats/profiles/invertebrates/shinyrayed-pocketbook/. Accessed January.

Fort Benning. 2011. Fort Benning Training Land Expansion. Draft Environmental Impact Statement. Specpro and Potomac-Hudson Engineering, Inc. Environmental Services LLC. May 2011.

Fort Benning. 2020. Heavy Off-Road Mounted Maneuver Training Area, Environmental Impact Statement. USAEC-Savannah District Georgia. October 2019.

Gulf South Research Corporation. 1999. Environmental Assessment Real Property Master Plan. March 1999 draft. Gulf South Research Corporation and Gulf Engineers and Consultants. Baton Rouge, Louisiana.

Heard, W. H. 1979. Identification manual of the freshwater clams of Florida. Florida Department of Environmental Regulation Technical Series 4(2): 1-82.

Hollon, G. 2020. Personal communication with Fort Benning NRMB Soil Conservationist. 11 February 2020.

Landers, J. L. 1980. Recent Research in the Gopher Tortoise and Its Implications. Pages 8-14 in R. Franz and R. J. Bryant (eds.). Proc. 1st. Ann. Mtg., Gopher Tortoise Council. 80 pp.

O'Brien, C. A., J. Brim-Box, and A. Daniels. 1995. Host fish attraction strategy and host fish identification for *Lampsilis subangulata*. Poster presented at the Conservation and Management of Freshwater Mussels II: Initiatives for the Future. October 16-18, 1995, St. Louis, Missouri.

O'Brien, C. A. 1997. Reproductive biology of *Amblema neislerii, Elliptoideus sloatianus, Lampsilis subangulata, Medionidus penicillatus,* and *Pleurobema pyriforme* (Bivalvia: Unionidae). Unpublished Master's thesis, University of Florida, Gainesville, Florida. 72 pp.

The Sikes Act. 1960. 16 U.S.C. § 670a-670o, 74 Stat. 1052, 1960

USAIC (U.S. Army Infantry Center and School). 2001. Integrated Natural Resources Management Plan, Fort Benning Army Installation 2001-2005.

U.S. Climate Data. 2020a. Climate Columbus-Fort Benning, Georgia. Retrieved from: https://www.usclimatedata.com/climate/columbus/georgia/united-states/usga0823. Accessed November.

U.S. Climate Data. 2020b. Climate Dahlonega, Georgia. Retrieved from: https://www.usclimatedata.com/climate/dahlonega/georgia/united-states/usga0155. Accessed November.

USDA. 2021a. Chattahoochee-Oconee National Forests: Resource Management. Retrieved from: https://www.fs.usda.gov/detailfull/conf/landmanagement/resourcemanagement/?cid=fseprd582279&width=full. Accessed February.

USDA. 2021b. Chattahoochee-Oconee National Forests: History & Culture. Retrieved https://www.fs.usda.gov/main/conf/learning/history-culture. Accessed January.

USFWS. 1994. Endangered and threatened wildlife and plants; proposed endangered status for five freshwater mussels and proposed threatened status for two freshwater mussels from eastern Gulf slope drainages of Alabama, Florida, and Georgia. Federal Register 59(148): 39524-39523.

USFWS. 1994. Five-Year Review: Summary and Evaluation. Athens, Georgia. 46 pp.

USFWS. 1998. Endangered and threatened wildlife and plants; determination of endangered status for five freshwater mussels and threatened status for two freshwater mussels from the eastern Gulf Slope drainages of Alabama, Florida, and Georgia. Federal Register 63:12664-12687.

USFWS. 2014. State of Georgia National Wetlands Inventory Geodatabase. Retrieved from http://www.fws.gov/wetlands/. Accessed January.

Van Allen, A. 2020.Personal communication with Fort Benning Range Division ITAM Coordinator. 10 March 2020.

Williams, J.D. and R.S. Butler. 1994. Class Bivalvia, freshwater bivalves. Pages 53-128, 740-742 in R. Ashton, ed. Rare and endangered biota of Florida. Volume 6. Invertebrates. University of Florida Press, Gainesville.

Wisniewski, J.M. 2007. Unpublished field notes from 2007. Georgia Department of Natural Resources, Wildlife Resources Division, Nongame Conservation Section, Social Circle.

Wood, R. M. and R. L. Mayden. 1993. Systematics of the Etheostoma jordani species group (Teleostei: Percidae), with descriptions of three new species. Bulletin of the Alabama Museum of Natural History 16: 31-46.

Wright, P.E. 2007. Floodplain Management Principles and Current Practices. The University of Tennessee, Environmental Engineering. 2007.

APPENDIX B: SPECIES MANAGEMENT COMPONENT (LIST)

Species Management Components accompanying this INRMP include:

- Appendix B1 Bald Eagle Species Management Component
- Appendix B2 Georgia Rockcress Species Management Component
- Appendix B3 Gopher Tortoise Species Management Component
- Appendix B4 Red-cockaded Woodpecker Endangered Species Management Component
- Appendix B5 Relict Trillium Endangered Species Management Component
- Appendix B6 Shinyrayed Pocketbook Endangered Species Management Component
- Appendix B7 Southern Elktoe Species Management Component
- Appendix B8 Wood Stork Species Management Component
- Appendix B9 Game and Sport Fish Management Component

APPENDIX C: ASSOCIATED PLANS (LIST)

Associated Plans accompanying this INRMP include:

- Appendix C1 Fort Benning Integrated Pest Management Plan
- Appendix C2 Fort Benning ACUB Strategic Plan
- Appendix C3 Fort Benning Conservation Law Enforcement Plan
- Appendix C4 Fort Benning Wildlife Aircraft Strike Hazard Plan
- Appendix C5 Fort Benning Integrated Wildland Fire Management Plan