FINAL

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP)

CAMP BLANDING

JOINT TRAINING CENTER

CLAY COUNTY, FLORIDA

FLORIDA ARMY NATIONAL GUARD

MARCH 2022

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UPDATED
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
CAMP BLANDING JOINT TRAINING CENTER
CLAY COUNTY, FLORIDA

SIGNATURE PAGE

This Integrated Natural Resources Management Plan (INRMP) is an update of the 2014 Camp Blanding Joint Training Center (CBJTC) INRMP that has been reviewed for operation and effect and recommended for update and continued implementation. It meets the requirements for INRMPs as specified in the Sikes Act, as amended (16 USC §670a *et seq.*). It has set appropriate and adequate guidelines for conserving and protecting the natural resources of CBJTC.

Signatures kept on file at the Camp Blanding Environmental Division (bldg. 4540)

Approving Officials:

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Chief, G-9 Army National Guard

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MAJ GEN EMMETT R. TITSHAW, JR.
The Adjutant General
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Executive Summary

The Integrated Natural Resources Management Plan (INRMP) is the primary guidance document and tool for managing natural resources at Florida Army National Guard's (FLARNG's) Camp Blanding Joint Training Center (CBJTC). CBJTC includes approximately 73,000 acres of land owned and operated by the State of Florida Armory Board in Clay County, Florida. CBJTC must provide a variety of environmental conditions and habitats in which to train soldiers. The management of CBJTC must be conducted in a way that provides for sustainable, healthy ecosystems, complies with applicable environmental laws and regulations, and provides for no net loss in the capability of military installation lands to support the military mission of the installation. Installation commanders can use INRMPs to manage natural resources more effectively to ensure that installation lands remain available and in good condition to support the installation's military mission over the long term.

This updated INRMP is intended to be consistent with the Sikes Act Improvement Act (SAIA) of 1997, 16 US Code (USC) §670a *et seq.*, as amended, Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*, Army Regulation (AR) 200-1 *Environmental Protection and Enhancement*, Army National Guard (ARNG) Directorate Environmental Programs Division (ARNG G-9), Memorandum 2019, *Guidance for the Creation, Implementation, Review, Revision and Update of INRMPs*, Department of the Army (DA), the DoDI 4715.03, *Natural Resources Conservation Program*, and Department of Defense (DoD) Office of the Deputy Under Secretary of Defense (DUSD) DoDM 4715.03, *Integrated Natural Resources Management Plan (INRMP) Implementation Manual*. This INRMP integrates all aspects of natural resources management with the rest of CBJTC's mission, and therefore becomes the primary tool for managing CBJTC's ecosystems and habitats while ensuring the successful accomplishment of the military mission at the highest possible levels of efficiency.

This INRMP is an update and reorganization of the 2014 CBJTC INRMP and is the result of a review for operation and effect done by US Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and FLARNG. The review for operation and effect determined that only an update is required since there are no military mission changes, no program or management philosophy changes, and no input received from USFWS or FFWCC that resulted in changes to the way natural resources are managed at CBJTC. Based on the desire to update the INRMP, FLARNG updated and reorganized the plan in accordance with the DoD INRMP template guidance and incorporated updated natural resources data.

Goals and objectives provide the framework for the natural resources management programs. Goals provide a general guiding direction for each technical area and logical objectives that facilitate achieving those goals are described for any priority issues within each technical area.

> GOAL Natural Resources Program Development (PM): Manage natural resources in a manner that is compatible with and supports the military mission while complying with applicable federal and state laws and DA regulations and policies.
>
> GOAL Soil Conservation and Sediment Management (SO): Manage soil to minimize sediment loss and erosion, while protecting water quality.

GOAL Water Resources Management (WA): Maintain water resources so they remain resilient, functional, and with no net loss of acreage.

GOAL Vegetation Management (VE): Manage vegetation to provide a variety of habitats to support the military mission, maintain native species, provide a sustainable forestry program, and enhance wildlife habitat.

GOAL Wildland Fire Management (FI): Implement a wildland fire program that minimizes safety concerns and wildfire risk, enhances the military mission, benefits rare species, protects cultural resources, and maximizes habitat management and ecological benefits.

GOAL Fish and Wildlife Management (FW): Maintain fish and wildlife populations while minimizing potential impacts to the military mission.

GOAL Threatened and Endangered Species Management (TE): Manage rare species using an ecosystem approach while maintaining the military mission at CBJTC.

GOAL Invasive Species and Integrated Pest Management (IN): Minimize impacts of invasive and pest species, while minimizing use of chemicals to manage those species, utilizing an integrated pest management approach.

These goals are supported in the INRMP by objectives and projects, as well as management strategies and specific actions to achieve these goals. Goals and objectives are listed in **Section 4.0** of the INRMP, and activities and projects are summarized in **Tables 15** and **16** of **Section 5.0**. These goals will ensure the success of the military mission and conservation of natural resources. The general philosophies and methodologies used throughout CBJTC natural resources management program are focused on conducting doctrinally required military training while maintaining ecosystem viability and sustainability.

This INRMP provides a description of the installation and the military mission, information regarding the environment on CBJTC, and specific natural resource management programs designed for successful and sustainable military training. The implementation of this INRMP at CBJTC will ensure the successful accomplishment of FLARNG's military missions while promoting adaptive management that sustains ecosystem and biological integrity and provides for multiple uses of natural resources.

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ABBREVIATIONS AND ACRONYMS

AEDB-EQ	Army Environmental Database - Environmental Quality
AERO	Army Environmental Reporting Online
AFP	Artillery Firing Point
amsl	above mean sea level
AR	Army Regulation
ARNG	Army National Guard
ARNG G-9	ARNG Directorate Environmental Programs Division
AT	Annual Training
ATAG	Assistant Adjutant General
ATV	All-Terrain Vehicle
BMP	Best Management Practice
BO	Biological Opinion
CBFI	Camp Blanding Forever Initiative
CBMTF	Camp Blanding Management Trust Fund
CBJTC	Camp Blanding Joint Training Center
CBJTC-DPW	CBJTC Department of Public Works
CBJTC-ED	CBJTC Environmental Division
CCAA	Candidate Conservation Agreement with Assurances
CCVI	Climate Change Vulnerability Index
CEC	Commission for Environmental Cooperation
CFMO	Construction and Facilities Management Officer
CFR	Code of Federal Regulations
CIP	Common Installation Picture
CWA	Clean Water Act
DA	Department of the Army
DA Pam	Department of the Army Pamphlet
DoD	Department of Defense
DoDI	DoD Instruction
DOI	Department of the Interior
DUSD	Deputy Under Secretary of Defense
DZ	Drop Zone
EA	Environmental Assessment
ECO	Environmental Compliance Officer
EIS	Environmental Impact Statement
EMS	Environmental Management System
EO	Executive Order
EQCC	Environmental Quality Control Committee
EQR	Environmental Quality Report
ERP	Environmental Resource Permit
ESA	Endangered Species Act
ESMC	Endangered Species Management Component
° F	degrees Fahrenheit
FAC	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDMA	Florida Department of Military Affairs
FEMA	Federal Emergency Management Agency
FFS	Florida Forest Service
FFWCC	Florida Fish and Wildlife Conservation Commission
FI	Wildland Fire Management
FIRM	Flood Insurance Rate Map
FLARNG	Florida Army National Guard
FLEPPC	Florida Exotic Pest Plant Council
FLMNH	Florida Museum of Natural History
FLNG	Florida National Guard

FMA	Fish Management Area
FMO-ENV	Facility Management Office Environmental Section
FNAI	Florida Natural Areas Inventory
FNSI	Finding of No Significant Impact
FRMP	Forest Resources Management Plan
F.S.	Florida Statute
FTA	Florida Trail Association
FW	Fish and Wildlife Management
FY	Fiscal Year
GIS	Geographic Information Systems
HUC	Hydrologic Unit Code
ICRMP	Integrated Cultural Resources Management Plan
IDT	Inactive Duty Training
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
ISO	International Standards Organization
ITAM	Integrated Training Area Management
IWFMP	Integrated Wildland Fire Management Plan
JFHQ-FL	Florida Joint Forces Headquarters
LRAM	Land Rehabilitation and Maintenance
LZ	Landing Zone
MBTA	Migratory Bird Treaty Act
METL	Mission Essential Task List
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOUT	Military Operations on Urban Terrain
NCDC	National Climatic Data Center
NEPA	National Environmental Policy Act of 1969
NGB	National Guard Bureau
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWCG	National Wildfire Coordinating Group
NWI	National Wetland Inventory
NWP	Nationwide Permit
OFW	Outstanding Florida Water
ONRW	Outstanding Natural Resource Water
PAO	Public Affairs Officer
PBG	Potential Breeding Group
PLS	Planning Level Survey
PM	Natural Resources Program Development
POTO	Plans, Operations, and Training Officer
REDHORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers
RCMP	Range Complex Master Plan
RCW	Red-cockaded Woodpecker
REC	Record of Environmental Consideration
RTLA	Range and Training Land Analysis
RTLP	Range and Training Land Program
SAIA	Sikes Act Improvement Act
SERCC	Southeast Regional Climate Center

SGCN	Species of Greatest Conservation Need
SJA	Staff Judge Advocate
SMZ	Special Management Zone
SO	Soil Conservation and Sediment Management
SOP	Standard Operating Procedure
SPCCP	Spill Prevention Control Countermeasure Plan
SPGP	State Programmatic General Permit
sq-ft	square feet
SR	State Road
SRA	Sustainable Range Awareness
SRP	Sustainable Range Program
STEP	Status Tool for Environmental Progress
STRAC	Standards in Training Commission
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
TA	Training Area
TAG	The Adjutant General
TE	Threatened and Endangered Species Management
TRI	Training Requirements Integration
TSC	Training Site Commander
US	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
USGS	United States Geological Survey
UXO	Unexploded Ordnance
VE	Vegetation Management
WA	Water Resources Management
WEA	Wildlife and Environmental Area
WMA	Wildlife Management Area
WMD	Water Management District

1.0 INRMP OVERVIEW AND POLICIES

1.1 Purpose

The Integrated Natural Resources Management Plan (INRMP) is the primary guidance document and tool for managing natural resources at Florida Army National Guard's (FLARNG's) Camp Blanding Joint Training Center (CBJTC). CBJTC includes approximately 73,000 acres of land owned and operated by the State of Florida Armory Board in Clay County, Florida (see **Section 2.1** for details). CBJTC must provide a variety of environmental conditions and habitats in which to train soldiers. The management of CBJTC must be conducted in a way that provides for sustainable, healthy ecosystems, complies with applicable environmental laws and regulations, and provides for no net loss in the capability of military installation lands to support the military mission of the installation. Installation commanders can use INRMPs to manage natural resources more effectively to ensure that installation lands remain available and in good condition to support the installation's military mission over the long term.

This updated INRMP is intended to be consistent with the Sikes Act Improvement Act (SAIA) of 1997, 16 US Code (USC) §670 *et seq.*, as amended, Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*, Army Regulation (AR) 200-1 *Environmental Protection and Enhancement*, Army National Guard (ARNG) Directorate Environmental Programs Division (ARNG G-9), Memorandum 2019, *Guidance for the Creation, Implementation, Review, Revision and Update of INRMPs*, Department of the Army (DA), the DoDI 4715.03, *Natural Resources Conservation Program*, and Department of Defense (DoD) Office of the Deputy Under Secretary of Defense (DUSD) DoDM 4715.03, *Integrated Natural Resources Management Plan (INRMP) Implementation Manual*. This INRMP integrates all aspects of natural resources management with the rest of CBJTC's mission, and therefore becomes the primary tool for managing CBJTC's ecosystems and habitats while ensuring the successful accomplishment of the military mission at the highest possible levels of efficiency. The INRMP is the guide for the management and stewardship of all natural resources present on CBJTC. A multiple-use approach will be implemented to allow for the presence of mission-oriented activities, as well as protecting environmental quality through the efficient management of natural resources.

This INRMP is an update and reorganization of the 2014 CBJTC INRMP and is the result of a review for operation and effect done by the US Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and FLARNG. The review for operation and effect determined that only an update is required since there are no military mission changes, no program or management philosophy changes, and no input received from USFWS or FFWCC that resulted in changes to the way natural resources are managed at CBJTC. Both FLARNG's environmental office and military trainers were included in the review. The projects identified in **Section 5** include recurring or ongoing projects as well as some newly identified projects needed for the implementation of the existing program.

FLARNG updated and reorganized this INRMP in accordance with the DoD INRMP template guidance and incorporated updated natural resources data. These templates were used to ensure the plan content would meet ARNG G-9 requirements and to provide an easy to follow and logical organization for the INRMP. The INRMP has been updated and reorganized as follows.

To determine what projects and programs have been implemented, an INRMP Implementation Analysis was developed and included in **Section 3.9** (see **Table 11**).

- Management goals and objectives have been reorganized and consolidated by resource area in **Section 4.0**.
- The list of implementation projects has been updated from the 2014 INRMP. See **Table 11** in **Section 3.0** for a summary on 2007 project implementation and **Tables 15** and **16** in **Section 5.0** for activities and projects to be carried out under this INRMP.
- Natural resources data and species lists have been updated to include new data and to include changes in the status of rare species (see **Section 2.0**).
- The Florida State Wildlife Action Plan (SWAP) has been incorporated (see **Section 3.8**).

1.2 Authority and Legal Requirements

The **SAIA** requires federal military installations and state-owned National Guard facilities with adequate wildlife habitat to develop a long-range INRMP and implement cooperative agreements with other agencies. All of CBJTC land is state-owned.

The **DoDI 4715.03**, *Natural Resources Conservation Program*, dated 18 March 2011, establishes polices and assigns responsibilities for complying with applicable federal, state, and local laws and regulations, executive orders (EOs), presidential memorandums, and DoD policies for the integrated management of natural resources on facilities managed or controlled by DoD. This instruction also implements new natural resources conservation metrics and provides procedures for developing, implementing, and evaluating effective natural resources management programs.

AR 200-1, *Environmental Protection and Enhancement*, dated 13 December 2007, addresses the environmental responsibilities of all Army organizations and agencies, and provides a framework for the Army Environmental Management System (EMS). This regulation provides guidance on when to develop and implement an INRMP and discusses associated coordination requirements.

DoDI and DODM 4715.03, *Supplemental Guidance concerning INRMP Reviews*, identifies the DoD policies and procedures concerning natural resources management and INRMP reviews, public comment, and endangered species consultation. INRMPs are required to be jointly reviewed by USFWS, the state conservation agency, and a military proponent for operation and effect on a regular basis, but not less often than every five years. Minor updates and continued implementation of an existing INRMP do not require an opportunity for public comment. Major revisions to an INRMP do require an opportunity for public review. The degree of endangered species consultation when updating or revising an INRMP depends upon the management strategies identified in the INRMP and the amount of past consultation. Most updates and revisions will not require formal consultation. Endangered Species Act (ESA) Section 7 consultation is required for INRMPs that contain management strategies that may affect federally listed species or critical habitat. The need for such consultation should become apparent during the review for operation and effect and be implemented, if necessary, as part of a revision. USFWS issued a Biological Opinion (BO) for the red-cockaded woodpecker (RCW; *Picoides borealis*) on Army Installations in 2007 (Costa 2007). A revision to this BO was made in 2008 (Hankla 2008) for CBJTC based on FLARNG's Endangered Species Management Component (ESMC) Update for Incidental Take (Robinson 2008) (see **Appendix D**).

ARNG G-9 Memorandum, *Guidance for the Creation, Implementation, Review, Revision and Update of INRMPs*, 2019, is intended to supplement the SAIA and AR 200-1 and supersede all previous ARNG INRMP guidance. The memorandum provides guidance for state ARNG Environmental Programs on when an INRMP is required, coordination requirements for new and revised INRMPs, INRMP format, integration of component plans (e.g., Integrated Wildland Fire Management Plan [IWFMP]), integration with other programs, critical habitat designations, INRMP implementation and funding, annual reviews and reviews for operation and effect, reporting and tracking, plan updates and revisions, when public review is necessary, and National Environmental Policy Act of 1969 (NEPA) requirements.

In accordance with **NEPA** (42 USC §4321 *et seq*.), an Environmental Assessment (EA) of the 2000 CBJTC INRMP was completed. The EA presented the *Preferred Alternative* (implementation of the INRMP) and other alternatives, summarized the affected environment, and assessed the environmental consequences of INRMP implementation. The EA concluded that implementation of the INRMP under the *Preferred Alternative* was expected to result in net positive effects by sustaining and enhancing the natural resources while providing for no net loss in training lands. A Finding of No Significant Impact (FNSI) was signed by the National Guard Bureau (NGB), and the 2000 CBJTC INRMP was implemented. In 2007, FLARNG updated the original 2000 CBJTC INRMP. At that time, it was determined no significant changes would occur as a result of the INRMP update and that the 2000 EA and FNSI were still valid.

Similarly, this INRMP is an update and reorganization of the 2007 CBJTC INRMP. The review for operation and effect determined that only an update is required since there are no military mission changes, no program or management philosophy changes, and no input received from USFWS or FFWCC that resulted in changes to the way natural resources are managed at CBJTC. An Environmental Checklist and a Record of Environmental Consideration (REC) were prepared and are included in **Appendix M**. The Environmental Checklist describes the Proposed Action (update and continued implementation of the 2007 CBJTC INRMP), identifies that the updated INRMP is addressed in the 2000 CBJTC INRMP EA, identifies potential impacts to various environmental media, and concludes that a REC is the appropriate level of NEPA documentation. The REC that accompanies the Environmental Checklist cites the EA for the 2000 CBJTC INRMP as adequately covering the updated INRMP.

In addition to these laws, regulations and directives, a number of others apply to natural resources management at CBJTC and are summarized in **Appendix J**.

1.3 Responsibilities

1.3.1 ARNG Headquarters

ARNG G-9 is responsible for review and approval of this INRMP. ARNG G-9 is also involved in programming, funding, and reviewing implementation projects set forth in the INRMP. ARNG G-9 is also the responsible federal agency for ESA compliance. Through this updated INRMP, the ARNG G-9, per 50 CFR 402.08, has expressed that his signature authorizes the FLARNG to act as the non-federal representative for informal consultation under the ESA. The ARNG G-9 is/will be involved with any and all ESA Section 7 formal consultations, and will initiate such consultation with the USFWS when necessary.

1.3.2 FLARNG

The Adjutant General (TAG) is directly responsible for the operation and maintenance of CBJTC, including implementation of this INRMP. Under the direction of TAG, the force structure (e.g., types and number of units, types of equipment, training events), projects, construction, and budgets at CBJTC are determined throughout the 5-year period of the INRMP. Under the leadership of TAG, all CBJTC personnel are trained in environmental awareness and as such, comply with policies, procedures, requirements, and applicable laws and regulations that accomplish the goals and objectives of the INRMP. TAG also ensures coordination of projects and construction between environmental, training, and engineering staffs. The office of TAG is located at FLARNG's headquarters in St. Augustine, Florida.

Two key positions within TAG's Office are the **Assistant Adjutant General (ATAG)** and the **Construction and Facilities Management Officer (CFMO)**. These positions ensure that natural resource issues are considered in Florida Department of Military Affairs (FDMA) budget and policies. The ATAG also serves as chairman of the FDMA Environmental Quality Control Committee, which provides overall guidance and policy direction to the environmental program, including management of CBJTC's natural resources.

The **Plans, Operations, and Training Officer (POTO)** has the primary responsibility of scheduling military training and safety of all personnel while training exercises are being conducted. The POTO and the **Training Site Commander (TSC)** determine the training load of CBJTC based upon the force structure determined by TAG. CBJTC Operations staff is familiar with all aspects of the training center, including training scheduling and conflicts, locations of training facilities, impairments, or problems with human-made structures or natural functions and needs for improvement or maintenance of the training land. Secondary to scheduling is maintaining a high-quality training environment, which is also a primary goal of this INRMP. The **Integrated Training Area Management (ITAM) Coordinator**, with oversight from the POTO, identifies construction and maintenance priorities, determines ITAM projects, and submits an annual ITAM work plan.

CBJTC Department of Public Works (CBJTC-DPW), along with the CFMO located at headquarters in St. Augustine, Florida, provides a full range of environmental, financial, and engineering disciplines for all facilities under the jurisdiction of the FDMA, including CBJTC. The CFMO is responsible for master planning and ensuring that all construction projects comply with environmental regulations by consulting with the CBJTC-ED and FMO-ENV prior to implementing any construction projects. The CBJTC-DPW also provides expertise in the development and production of environmental awareness materials for distribution to troop commanders.

CBJTC Environmental Division (CBJTC-ED), with support from the statewide **Facility Management Office Environmental Section (FMO-ENV)**, is assigned day-to-day responsibility for development and implementation of the revised INRMP. CBJTC-ED, housed in the Land Management Center at CBJTC, is composed of three primary sections: Conservation (including Forestry), Compliance, and Geographic Information Systems (GIS). The FMO-ENV is located at FLARNG's headquarters in St. Augustine, Florida. CBJTC-ED is responsible for directing the management of natural resources on CBJTC, identifying compliance requirements, and providing guidance to the TSC and other training site personnel. Specifically, CBJTC-ED provides technical assistance to the TSC and the training site personnel to develop projects, secure required permits, conduct field studies, provide environmental awareness materials, identify and map natural and cultural resources, direct the NEPA process, and manage the development and revision of the INRMP. CBJTC staff is responsible for providing input to the plan and implementing specific elements of the plan.

The **Public Affairs Officer (PAO)** serves as a liaison between FLARNG and the public. The PAO represents FLARNG in public meetings, prepares media presentations, and promotes the personnel and events occurring at various FLARNG locations. The PAO also offers photography services for natural resources projects and community educational events.

The **Staff Judge Advocate (SJA)** is the legal advisor to TAG and FLARNG staff on laws and regulations that affect training land use, environmental compliance, and policy.

1.3.3 Other Organizations

USFWS provides technical assistance to CBJTC-ED and is a cooperator during preparation of this INRMP. Specifically, the USFWS is the principal advisor to FLARNG on issues regarding federally protected rare, threatened, and endangered species.

FFWCC provides guidance to CBJTC-ED on species and habitats of special state concern and is a cooperator during the preparation of this INRMP. They also provide information for the management of fish and wildlife**,** water quality protection, and recreation.

1.4 Conditions for Implementation and Revision

1.4.1 Implementation and Annual Reviews

In accordance with DoD and Army policy, FLARNG will review the INRMP annually in cooperation with USFWS and FFWCC. On an annual basis, FLARNG will coordinate with USFWS local field office and FFWCC to review the previous year's INRMP implementation and discuss implementation of upcoming programs and projects. Coordination will be done through a meeting or by letter or email. A memorandum of record detailing each annual review will be prepared by FLARNG, and these annual review documents will be appended in **Appendix L**. Additionally, CBJTC-ED will ensure that completed annual reviews are tracked and reported in the annual Army Environmental Database data submission (see **Section 5.5.2** for more details).

During this annual review, the need for updates or revisions will be discussed. If minor updates are needed, the requesting party will initiate the updates. After agreement of all three parties, these will be added to the

INRMP. If it is determined that major changes are needed, all three parties will provide input and an INRMP revision and associated NEPA review will be initiated with FLARNG acting as the lead coordinating agency. The annual meeting will be used to help expedite the more formal review for operation and effect and if all parties agree and document their mutual agreement, it can fulfill the requirement to review the INRMP for operation and effect.

If not already determined in previous annual meetings, by the fourth year annual review a determination will be jointly made to continue implementation of the existing INRMP with minor updates or to proceed with a revision. If the parties feel that the annual reviews have not been sufficient to evaluate operation and effect and they cannot determine if the INRMP implementation should continue or be revised, a formal review for operation and effect will be initiated. The determination on how to proceed with INRMP implementation or revision will be made after the parties have had time to complete this review.

As part of the annual review, FLARNG will specifically:

- Invite feedback from USFWS and FFWCC on the effectiveness of the INRMP
- Inform USFWS and FFWCC which INRMP projects and activities are required to meet current natural resources compliance needs
- Document specific INRMP action accomplishments from the previous year and discuss upcoming projects and activities
- Verify that all must-fund projects and activities are budgeted and on schedule, all trained natural resources positions are either filled or in the process of being filled, INRMP goals and objectives are still valid, no significant changes to natural resources or the mission have occurred, and no net loss to CBJTC's training capability has occurred in accordance with DA and ARNG Policy

Information for the annual reviews comes from FLARNG environmental staff, CBJTC military leadership, cooperating agencies, project files, and ARNG G-9 as applicable. Natural resources data and program and project information are available to cooperating agencies. They may request to see project folders or to have a site visit to view natural resources projects in progress at any time.

1.4.2 INRMP Review for Operation and Effect

Not less than every five years, the INRMP will be reviewed for operation and effect to determine if the INRMP is being implemented to meet the requirements of the SAIA and Army Policy and contributing to the conservation and rehabilitation of natural resources at CBJTC. The review will be conducted by the three cooperating parties to include the commander responsible for the INRMP, the Regional Director of USFWS, and the Director of FFWCC. These agencies all have technical representatives who actually perform the review.

The review for operation and effect will either conclude that the INRMP is meeting the intent of the SAIA and it can be updated and implementation can continue; or that it is not effective in meeting the intent of the SAIA to conserve natural resources while providing for no net loss in training capability and it must be revised. The conclusion of the review will be documented in a jointly executed memorandum, meeting minutes, or in some other way that reflects mutual agreement.

If only minor updates are needed, they will be done in a manner agreed to by all parties. The updated INRMP will be reviewed by the local USFWS office, USFWS Regional Director, and FFWCC Director. Once concurrence letters or signatures are received from USFWS's Regional Director and FFWCC's Director, the INRMP will continue to be implemented. A new NEPA review is not necessary for an update and the continued implementation of an existing INRMP that has previously undergone NEPA review. In this case, an Environmental Checklist and REC citing the previous NEPA-compliant document is needed.

If a review of operation and effect concludes that an INRMP must be revised, there is no set time to complete the revision. The existing INRMP remains in effect until the revision is complete and USFWS and FFWCC concur with the revised INRMP. FLARNG will endeavor to complete such revisions within 18 months depending upon funding availability. Revisions to the INRMP will go through a more detailed review process similar to development of the initial INRMP to ensure FLARNG's military mission and USFWS and FFWCC concerns are adequately addressed, and the plan meets the intention of the SAIA and Army Policy. Revisions will usually require a new NEPA-compliant analysis. An EA will be done as part of the revision process if determined by ARNG G-9 to be necessary.

1.5 Management Philosophy

This INRMP update for CBJTC has been developed in cooperation with USFWS and FFWCC. Developed using an interdisciplinary approach, information has been gathered from various FLARNG directorates, CBJTC staff, as well as other federal, state, and local agencies and special interest groups with an interest in the management of CBJTC natural resources. Agencies and organizations consulted during the development of this INRMP update, as well as initial agency coordination and response letters, have been included in **Appendix K**.

1.5.1 Support of the Military Mission

The overall policies and philosophy of land management at CBJTC support AR 200-1 and 32 Code of Federal Regulations (CFR) 651, *Environmental Effects of Army Actions*, which are based on the concept that natural resources management is an integral component of the military training environment. Management of natural resources using an ecosystem approach ensures the sustainable use of training lands while considering the effects on the surrounding environment and public concern. FLARNG shall maintain sustainable natural resources as a critical training asset upon which to accomplish CBJTC's mission. To accomplish this, FLARNG will:

- Ensure no net loss in the capability of installation lands to support existing and projected military training and operations at CBJTC
- Maintain quality training lands through proactive management, range and training land monitoring and damage minimization, mitigation, and rehabilitation

1.5.2 Environmental Management System

Developing and implementing an EMS is required at all ARNG installations.

In 2000, EO 13148, *Greening the Government through Leadership in Environmental Management,* established a 5-year EMS implementation goal for federal facilities.

The ARNG G-9 and FLARNG consider CBJTC to be part of the combined FLARNG operations in Florida. The EMS is part of the overall FLARNG management system and includes organizational structure, planning, responsibilities, practices, procedures, and processes, and resource allocation for developing, implementing, achieving, reviewing, and maintaining environmental commitments. The International Standards Organization (ISO)-14001 EMS model used by FLARNG leads to continual improvement based upon a cycle of "plan, do, check, act" (also known as adaptive management):

- Planning, including identifying environmental aspects and establishing goals [plan]
- Implementing, including training and operational controls [do]
- Checking, including monitoring and corrective action [check]
- Reviewing, including progress reviews and acting to make needed changes to the EMS [act]

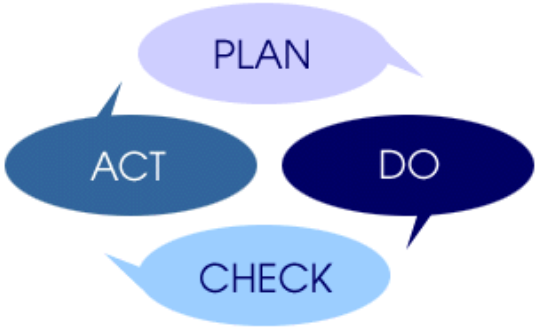

Figure 1. EMS Process from US Environmental Protection Agency (USEPA)

The EMS is continually updated through this cycle by fine-tuning its management of operations that may harm the environment. This continual improvement cycle is a fundamental attribute of the EMS that allows the system to adapt to the dynamic nature of the organization's operations.

This INRMP directly supports FLARNG's EMS. FLARNG personnel will perform annual reviews of the INRMP in conjunction with USFWS, FFWCC and other agencies in order to support the concept of EMS. Annual reviews are discussed in **Section 1.4.1** and monitoring of implementation is discussed in **Section 5.5**.

1.5.3 Ecosystem Management

Natural resources at CBJTC will be managed with an ecosystem management approach as directed by AR 200-1 and DoDI 4715.03. Ecosystem management may be defined as management to restore and maintain the health, sustainability, and biological diversity of ecosystems while supporting sustainable economies and communities. The goal of ecosystem management on military lands is to ensure that military lands

support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. As described in DoDI 4715.03, ecosystem management will incorporate the following elements as described in **Table 1**.

Table 1. Elements of Ecosystem Management

Elements	
1	Avoid single-species management and implement an ecosystem-based multiple species management approach, insofar as that is consistent with the requirements of the ESA
2	Use an adaptive management approach to manage natural resources in response to conditions such as climate change
3	Evaluate and engage in the formation of local or regional partnerships that benefit the goals and objectives of the INRMP
4	Use the best available scientific information in decision-making and adaptive management techniques in natural resource management
5	Foster long-term sustainability of ecosystem services

Biodiversity is the degree of variation of life forms within a given ecosystem, biome, or an entire planet. The DoD's challenge is to manage for biodiversity in a way that supports the military mission. The INRMP is identified by DoD as the primary vehicle for conserving biodiversity on military installations. Specific management practices identified in this INRMP have been developed to enhance and maintain biological diversity within the ecosystems at CBJTC. The outcome of biodiversity conversation on DoD land includes the items listed in **Table 2**.

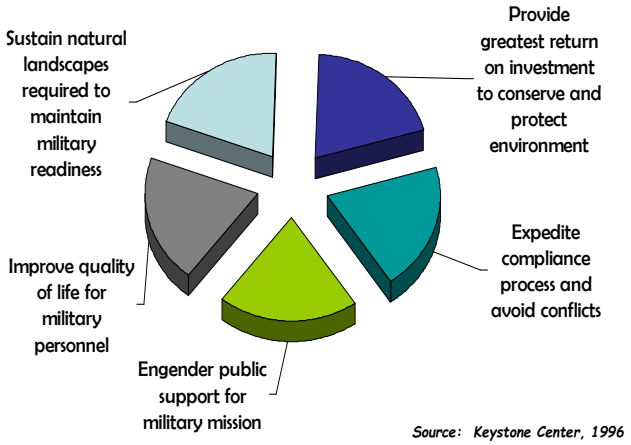

Figure 2. Why Conserve Biodiversity on Military Lands?

Table 2. Outcomes of Biodiversity Conservation	
Outcomes	
1	Maintain or restore remaining native ecosystem types across their natural range of variation
2	Maintain or reestablish viable populations of native species on an installation, when practical
3	Maintain ecological processes, such as disturbance regimes, hydrological processes, and nutrient cycles, to the extent practicable
4	Manage and monitor resources over sufficiently long time periods to allow for adaptive management and assessment of changing ecosystem dynamics (i.e., incorporate a monitoring component to management plans)

1.5.4 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. Requirements for the SRP are set forth in AR 350-19, *Army Sustainable Range Program*, dated 30 August 2005. The SRP is defined by its two core programs, the Range and Training Land Program (RTLP) and the ITAM Program, which focus on the doctrinal capability of the Army's ranges and training land. To ensure the accessibility and availability of Army ranges and training land, the SRP core programs are integrated with the facilities management, environmental management, munitions management, and safety program functions supporting the doctrinal capability.

1.5.5 Range and Training Land Program

The RTLP provides a range operations and modernization capability for the central management and programming of live-fire training ranges and maneuver training lands, including the design and construction activities associated with them. The RTLP 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 RTLP defines the quality assurance and inspection milestones for range development projects and the Standard Operating Procedures (SOPs) to safely operate military training, recreational, or approved civilian ranges under Army control and supports the Commanders' Mission Essential Task List (METL) and Army training strategies. RTLP also establishes the procedures and means by which the Army range infrastructure is managed and maintained on a daily basis in support of the training mission.

1.5.6 Integrated Training Area Management Program

The ITAM program provides for the management and maintenance of training lands by integrating mission requirements derived from the RTLP with environmental requirements and environmental management practices. The objectives of FLARNG's ITAM program are to:

- Achieve optimal sustained use of lands for realistic training by providing a sustainable core capability that balances usage, condition, and level of maintenance
- Implement a management process that integrates FLARNG training and other mission requirements for land use with sound natural resources management
- Advocate proactive conservation and land management practices by aligning FLARNG land management priorities with FLARNG training and readiness priorities

ITAM consists of four proactive subprograms designed to facilitate these processes.

1) **Range and Training Land Analysis** (RTLA) is the ecological monitoring component that serves to characterize and monitor installation natural resources. RTLA provides a means to collect and maintain GIS data for CBJTC.
2) **Training Requirements Integration** (TRI) uses information generated and assimilated from RTLA to assist with military exercise scheduling and logistics to minimize harmful practices or activities within training areas.
3) **Land Rehabilitation and Maintenance** (LRAM) provides mitigation measures and land rehabilitation where needed or desired.
4) **Sustainable Range Awareness** (SRA) activities serve to promote awareness of environmentally sensitive issues and instill a stewardship ethic among unit commanders, soldiers, and neighboring communities.

The ITAM Program at CBJTC is administered by the ITAM Coordinator with review and approval by the POTO. The ITAM Program at CBJTC was formally initiated in Fiscal Years (FYs) 1992-1993, when a floral inventory was conducted and RTLA plots were established to collect baseline data on CBJTC's flora and fauna. CBJTC is a Category III installation (i.e., an installation with important training missions and significant environmental sensitivity to missions). ITAM requirements for CBJTC are identified yearly and submitted to ARNG G-9, so that projects can be validated and funded through the ITAM Work Plan budgeting process.

The requirements of the ITAM Program for CBJTC are detailed in the ITAM Plan and Work Plan (**Appendix O**). Project information relevant to INRMP implementation from the ITAM Work Plan has been incorporated into this INRMP. Together, ITAM and natural resources management as outlined in this INRMP ensure sustainable use of training lands.

In this updated INRMP, the only projects included from programs other than natural resources are those that directly satisfy an objective and are integral to INRMP implementation. The requirement to coordinate ITAM projects, construction, and all other land uses with CBJTC-ED and FMO-ENV, to implement effective natural resources management practices, and to ensure regulatory compliance is inherent in the INRMP

implementation and retained in this updated INRMP. A detailed analysis of 2014 INRMP project implementation status, including ITAM projects, is provided in **Section 3.8**.

1.5.7 Goals and Objectives

Goals and objectives provide the framework for the natural resources management programs. Goals provide a general guiding direction for each technical area and logical objectives that facilitate achieving those goals are described for any priority issues within each technical area. The objectives then drive the development of activities and projects to achieve those objectives. Goals and objectives are described in **Section 4.0** under each technical area. Activities and projects, and the objectives they support, are described in **Tables 15 and 16** in **Section 5.0**. Below are the goals identified in **Section 4.0**:

GOAL PM: Manage natural resources in a manner that is compatible with and supports the military mission while complying with applicable federal and state laws and DA regulations and policies.

GOAL SO: Manage soil to minimize sediment loss and erosion, while protecting water quality.

GOAL WA: Maintain water resources so they remain resilient, functional, and with no net loss of acreage.

GOAL VE: Manage vegetation to provide a variety of habitats to support the military mission, maintain native species, provide a sustainable forestry program, and enhance wildlife habitat.

GOAL FI: Implement a wildland fire program that minimizes safety concerns and wildfire risk, enhances the military mission, benefits rare species, protects cultural resources, and maximizes habitat management and ecological benefits.

GOAL FW: Maintain fish and wildlife populations while minimizing potential impacts to the military mission.

GOAL TE: Manage rare species using an ecosystem approach, while maintaining the military mission at CBJTC.

GOAL IN: Minimize impacts of invasive and pest species, while minimizing use of chemicals to manage those species, utilizing an integrated pest management approach.

1.5.8 Integration with Other Plans

By its nature, an INRMP is multidisciplinary and provides the summary for natural resources at a specific installation. As a result, information from an INRMP is incorporated into other plans and other plans help identify management priorities and potential impacts to natural resources. The INRMP is integrated with a number of FLARNG plans including:

- Integrated Cultural Resources Management Plan (ICRMP) for Installations of FLARNG (**Appendix P**)– plan for management of cultural resources, including consultation and other legal requirements, known cultural resources, processes, and responsibilities at FLARNG facilities.
- Integrated Pest Management Plan (IPMP) (**Appendix Q**) – plan for management of pest species, including nuisance wildlife and invasive species, to minimize impact to mission, natural resources, and the environment.

- Integrated Wildland Fire Management Plan (IWFMP) for CBJTC – plan lays out specific guidance, procedures, and protocols in the prevention, detection, and suppression of wildfires and the planning and operating procedures involved with prescribed burning on CBJTC (Florida National Guard [FLNG] 2011a).
- Stormwater Pollution Prevention Plan (SWPPP) for CBJTC – plan for management of stormwater and water-borne pollution (FLARNG 2000).
- Spill Prevention Control Countermeasure Plan (SPCCP) – plan for managing oil spill prevention, preparedness, and response to prevent oil discharges to surface waters (FLARNG 2012).
- Forest Resources Management Plan (FRMP) for CBJTC – plan establishes management strategies focused on providing a variety of habitat and stand conditions for the purpose of military training, maintaining a sustainable revenue from harvest of forest products, and other resource uses, and enhancing the quality of wildlife habitat for both recreational game and non-game species (FLNG 2005).
- Range Complex Master Plan (RCMP) for the State of Florida – plan establishes the range and maneuver land requirements for the State of Florida to support the installation training missions (FLNG 2011b).
- Master Plan for CBJTC – plan identifies future needs and requirements of the installation as it relates to the use and/or designation of lands, facilities, and resources and establishes a guide for installation growth and development (FLARNG 2006).

2.0 INSTALLATION INFORMATION

2.1 General Description

The 73,000-acre CBJTC is located in northeast Florida (see **Figure 3**). The installation lies completely within Clay County and is roughly 45 miles equidistant from the cities of Gainesville to the southwest, Jacksonville to the northeast, and St. Augustine to the east. The main gate is located on State Road (SR) 16 approximately 12 miles east of the City of Starke. Middleburg is located adjacent to the northeast of CBJTC, while the town of Keystone Heights lies adjacent to the southwest (see **Maps 1** and **2**; **Appendix B**). *All maps are provided in **Appendix B** and only the map number is referenced in the remainder of the document.*

CBJTC land is owned and operated on behalf of FLARNG by the Florida Armory Board. FLARNG is responsible for the management of the entire site, with the exception of game management, hunting activities, and leased areas. Since its establishment in 1939, CBJTC has fluctuated in size from approximately 39,000 to 125,000 acres, and presently encompasses approximately 73,000 acres. CBJTC is divided into a Cantonment Area, Impact Area, and 37 maneuver training areas (TAs) (see **Map 2**). TAs are often referred to by location within the installation. North Post includes the TAs north of SR 16. TAs to the east of the Cantonment Area and Impact Area are in East Post, while the remainder of the site is characterized as South Post.

Figure 3. Location of CBJTC within Florida

2.1.1 Regional Land Use

According to the US Census Bureau's *2010 Census*, Clay County has an estimated population of 190,865, which is about 1 percent of Florida's total population (18,801,310). Clay County is part of the Jacksonville metropolitan area, which comprises the five counties in the northeastern corner of Florida. The installation is adjacent to the city of Middleburg (population 13,008) and the city of Keystone Heights (population 1,350). CBJTC lies along the eastern boundary of Bradford County (population 28,520). The city of Starke (population 5,449) and town of Lawtey (population 730) are located within approximately 3 miles and 1 mile, respectively, to the west of CBJTC (see **Map 1**).

In general, Florida's population increased by approximately 45.4 percent from 1990 to 2010, which is nearly two times more than the overall US population increase (24.1 percent) during this time. Clay County has experienced tremendous population growth; it increased in population between 1990 (population 105,986) and 2010 (population 190,865) by about 80 percent, while the populations of the cities of Middleburg and Keystone Heights have more than doubled. Despite Bradford County's population increase of 26.7 percent between 1990 and 2010, the growth of Bradford County, the city of Starke and town of Lawtey were much lower than Clay County. Population growth in the immediate vicinity of CBJTC appeared to slow slightly between 2000 and 2010 in comparison to 1990 and 2000. For example, Starke's population declined slightly (about 2 percent) and Keystone Heights stayed essentially the same between 2000 and 2010. The city of Middleburg's population increased by 25.8 percent between 2000 and 2010; however, in comparison, the city experienced a 66 percent increase during the previous 10 years (US Census 1990, 2000 and 2010). CBJTC is in an area where development is approaching from several directions. CBJTC has been partnering with ARNG G-9 and the State of Florida through the Florida Forever program since 2003 to establish a three-mile compatible use buffer around the installation to manage encroachment (see **Section 3.5**).

Regional land use is relatively rural, being mostly undeveloped and forested. CBJTC is located in a region of strategic importance to the southeastern US and statewide conservation system. The installation is situated approximately 25 miles northwest of Ocala National Forest and 25 miles southeast of Osceola National Forest (see **Map 1**). CBJTC is bordered to the southeast by Gold Head Branch State Park, to the north by Jennings State Forest Wildlife Management Area (WMA) and to the east by private timberlands. Additionally, the Santa Fe Swamp Wildlife and Environmental Area (WEA), Belmore State Forest WMA, and Raiford WMA occur within approximately 4 miles of the installation (see **Map 1**). CBJTC contributes directly to regional conservation since approximately 56,197 acres, or 77 percent, of CBJTC is managed by FFWCC as a WMA (see **Section 2.2.3**). A brief description of the natural areas adjacent to and in the immediate vicinity of CBJTC is provided below.

Jennings State Forest WMA

The Jennings State Forest WMA is located in northwest Clay County north of CBJTC, and includes approximately 24,000 acres that encompass the headwaters of Black Creek. An upland ecosystem restoration project is underway to restore habitat for the gopher tortoise (*Gopherus polyphemus*), northern bobwhite (*Colinus virginianus*) and other upland species. Hunting, fishing, wildlife viewing, primitive camping, hiking, horseback riding, bicycling, and canoeing are allowed (FFWCC 2020).

Gold Head Branch State Park

The Mike Roess Gold Head Branch State Park was one of the first Florida state parks developed by the Civilian Conservation Corps during the 1930s. The 2,000-acre park is situated on rolling sandhills containing marshes, lakes, and scrub habitat, and is situated directly adjacent to CBJTC to the southeast. Visitors to the park can enjoy hiking and wildlife viewing along the park´s nature trails and a 5.44-mile stretch of the Florida National Scenic Trail, which also passes through CBJTC. Group and primitive campsites are available as are fully equipped lakefront cabins (Florida State Parks 2020).

Santa Fe Swamp WEA

The Santa Fe Swamp WEA is approximately 5,627 acres of floodplain swamp located approximately 2.5 miles southwest of CBJTC in Bradford County; the WEA protects the water quality and quantity of the Santa Fe River and Lake. Only primitive weapons (e.g., bow and arrow and muzzleloader) hunting of white-tailed deer (*Odocoileus virginianus*), feral hog (*Sus scrofa*), wild turkey (*Meleagris gallopavo*), gray squirrel (*Sciurus carolinensis*), and eastern cottontail rabbit (*Sylvilagus floridanus*) is allowed on this area during specified seasons. Falconry is also permitted. Fishing, wildlife viewing, horseback riding, hiking, and bicycling are permitted throughout the year (FFWCC 2020).

Belmore State Forest WMA

The Belmore State Forest WMA occupies 8,737 acres in south-central Clay County, approximately 3 miles southeast of CBJTC. Ates Creek, a tributary of the South Fork of Black Creek, flows through the forest for six miles. The variety of natural communities here provides public recreation opportunities and wildlife habitat while performing essential roles in the protection of water quality, groundwater recharge, flood control, and aquatic habitat (FFWCC 2020).

Raiford WMA

Raiford WMA consists of 9,141 acres in Bradford County approximately 4 miles northwest of CBJTC. The WMA is dominated by pine flatwoods, pine plantations, and lowland hardwoods, and is bisected by the New River. A portion of the area is only open during hunting seasons (FFWCC 2020).

2.1.2 Installation History

Before the Spaniards arrived in 1821, the Timucuan Indians occupied the area. However, by 1728 the Timucuan Indians had been nearly eliminated by a succession of raids by the English and their Lower Creek and Seminole Indian allies. Spanish ownership of Florida continued until 1763, when the English acquired it and kept ownership until 1783. During this period, a Seminole village was on the Old Spanish road in what is now Clay County. For details on prehistoric land use, refer to the FLARNG ICRMP (**Appendix P**).

Permanent settlement of Clay County began during the second Spanish rule. Examination of US Rectangular Surveys from 1833 and 1855 suggest that the location of CBJTC was little altered by humans at the time of the 1833 survey, but was beginning to be substantially altered by the time of the 1855 survey. In 1860 the population of the county was 1,914. Much of Clay County's prosperity and growth during this period was associated with the expansion of woodland production and other agricultural cash crops.

In the 1910s the Dowling-Shands Lumber Company operated a logging railroad that extended from Green Cove Springs to the western region of the lands soon to be occupied by CBJTC. Beginning in 1919, the Florida Essential Oil Company harvested the outer leaves from more than 2,000 camphor (*Cinnamomum camphora*) trees and distilled them to extract camphor, which was used in the manufacturing of smokeless gunpowder. By 1940 the timber company had gone out of business, in part due to the over-logging of the area. During that time, the lands that became CBJTC were turpentined by a number of firms, including Dowling-Shands Lumber Company, Powell-Smill Company, and O.J. Griffin and Brothers. Turpentine involves obtaining crude gum from living long leaf pine (*Pinus palustris*) trees by removing a section of bark, wounding the tree, and collecting the secreted sap for distillation into spirits of turpentine and rosin. After turpentining and then cutting all the timber, these companies sold their land to the Southern Cattle Feeding Company, and the clear-cut land was then used as pasture. The emphasis on forestry has continued in Clay County, but today the trees are typically planted slash pine (*Pinus elliotti*), the major product is pulp, and the land is usually owned by national paper companies. For more details on historic land use, refer to the FLARNG ICRMP (**Appendix P**).

The State of Florida Armory Board began acquiring real estate for the establishment of CBJTC during 1939-1940. As United States (US) involvement in World War II became imminent, the federal government launched a hasty building program that employed up to 21,311 workers. At peak occupancy during World War II, CBJTC operated a 20,000-man capacity dry cleaning plant (Harris and McCally 1995).

By enacting Public Law 493 in 1954 (effective in 1955), Congress established the present boundaries of CBJTC under the sponsorship of FDMA. The following phases of expansion occurred after 1955:

1. The State Armory Board acquired what is now most of the southern portion of CBJTC, which includes the Cantonment Area, the Impact Area, and “South Post”.
2. The federal government acquired (in two phases) what is now known as “North Post”.
3. The property was extended eastward to what is now SR 21.
4. Land leases for various areas were made for airfields, including the area that is presently Keystone Airpark.
5. Land is leased to the south and east from J.C. Penney of Penney Farms (which staved off bankruptcy for the national chain retailer), but with many excisions (including Penney Farms itself) to accommodate dwellings and landholdings.
6. A westward reduction in the leases occurred resulting in the current boundary configuration.

2.1.3 Military Mission

The **Federal Mission** is to maintain properly trained and equipped units, available for prompt mobilization for war, national emergency, or as otherwise needed. The ARNG is a partner with the Active Army and the Army Reserves in fulfilling the country's military needs. During times of national emergency, National Guard members may be called into active federal service by the President of the US.

The **State Mission** is to provide trained and disciplined forces for domestic emergencies or as otherwise provided by state law to ensure the protection of life and property and the preservation of public safety. The National Guard’s “state role” is to assist local law enforcement agencies during emergencies at the direction

of the governor through the Florida Adjutant General. This dual federal-state mission is unique within the US military and sets the National Guard apart from any other regular or reserve component.

CBJTC Mission is to support both federal and state missions. In support of the federal mission, CBJTC provides personnel, training, logistical and administrative support, and serves as a training base for improving individual solider skills, collective training, overall unit readiness, and other essential needs to valued customers. In support of the state mission, CBJTC is to be prepared to respond to State Active Duty missions. The installation has serves as a site for continuation of government and continuity of operations for state government and Florida Joint Forces Headquarters (JFHQ-FL). The community-level mission is to be a "good neighbor" which is shown by civilian and government agency use of various facilities for outdoor recreation, education, and controlled public hunting (FLNG 2011b).

2.1.4 Training Operations and Infrastructure

CBJTC presently serves as a logistical support base during federal and state emergencies, such as hurricanes and disastrous wildfires. The installation is structured to command, operate, manage, and administer services of the facilities and assign use of resources to ensure training and logistical support is provided to FLARNG units. Because the installation is a joint training center, it also provides training support to units from other states, other reserve components, certain elements of active components, federal government organizations, state and local agencies, and civic groups. This support is provided during 5 major annual training (AT) periods, 50 inactive duty training (IDT) weekends per year and Monday through Friday for approximately 50 plus weeks per year.

CBJTC is the major training area for the FLNG and home to a variety of Army and Air National Guard units along with the Florida Youth Challenge Academy, the 211th Regiment Florida Regional Training Institute, and other military and civilian operations. CBJTC has been used for more than a half century for a variety of military training activities. CBJTC routinely supports the following units:

- 202nd Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers (REDHORSE) and Weather Readiness Training Center, which are Florida Air National Guard tenant units.
- 820th Security Forces Group from Moody Air Force Base in Georgia in support of their ground security missions during deployments.
- Navy rotary wing units based at Naval Air Station Jacksonville and Mayport Naval Station that conduct door gunnery and ground-based crew-served weapons training throughout the year.
- Active and reserve Marine Corps units from the local area (active: Kings Bay, reserve: Jacksonville, Tampa, and Tallahassee) use the live fire ranges and training lands.
- Active and reserve Coast Guard units throughout the country conduct training at CBJTC for helicopter door gunnery, sniper training, and waterborne live fire on Lowry Lake.

Civilian tenants occur within CBJTC as well (e.g., truck driving school). Prior to 2008, Du Pont Corporation had leased up to 10,686 acres since the late 1940s on the western boundary of CBJTC for mining operations.

Approximately 56,200 acres of CBJTC is also known as Camp Blanding WMA, which is managed by FFWCC. A memorandum of agreement (MOA) was developed between FDMA and FFWCC for hunting, fishing, and outdoor recreation within the 56,197 acres. Another MOA also exists between FFWCC and FDMA for use of CBJTC as a Fish Management Area (FMA), specifically for Lowry Lake and Magnolia Lake. Copies of the MOAs are provided in **Appendix I**, and additional detail about Camp Blanding WMA is provided in **Section 4.6.2**.

A brief summary of CBJTC training facilities, activities, and land use is provided below. For more detailed information on existing and potential future training operations and infrastructure, refer to the *RCMP for the State of Florida* (FLNG 2011b) and *Master Plan for CBJTC* (FLARNG 2006).

Military Training Facilities and Activities

CBJTC specializes in supporting military training for light infantry exercises. The 73,000-acre CBJTC is divided into a Cantonment Area, Impact Area, and 37 maneuver TAs in North, East, and South Post (see **Map 2**).

The approximately 4,900-acre Cantonment Area is the developed portion of the training site and is designed with a network of streets dividing it into city block-sized units. This area also encompasses Kingsley Lake and Kingsley Village along its western boundary.

The approximately 15,500-acre Impact Area is considered a high hazard impact area due to unexploded ordnance (UXO) from weapon systems ranging from 20mm grenades to 8-inch artillery. Due to safety concerns, no public access is allowed in this portion of the installation. CBJTC currently has over 100 ranges located on the installation. The majority of these ranges occur within or in the immediate vicinity of the Impact Area. Ranges include, but are not limited to, 31 small arms ranges, 5 infantry squad battle courses, 5 infantry platoon battle courses, 36 artillery points, 27 mortar points, 2 demo ranges, 1 modular shoot house, and 2 Military Operations on Urban Terrain (MOUT) facilities. Refer to the *RCMP for the State of Florida* (FLNG 2011b) for a more detailed summary of CBJTC ranges. Weapon system qualification standards are detailed in DA Pamphlet (DA Pam) 350-38, *Standards in Training Commission (STRAC)* (US Army 2009).

The remainder of the site is divided into 37 maneuver TAs that are connected by an extensive vehicular trail network. The TAs along the western boundary of CBJTC (i.e., MA1, MA2, S11, S12 and S13) were previously leased by DuPont for mining (see **Map 2**). Training activities are conducted in accordance with SOP 210-4.

CBJTC facilities are used to conduct command post exercises, logistical exercises, specialized training, and training conferences; tracked and wheeled operations on roads and major trails; mounted and dismounted maneuvers; and weapons firing (FLNG 2011b). A summary of training activities and their potential impacts to CBJTC natural resources is provided in **Table 3**.

In addition, CBJTC has a complete Air Assault training facility to support a Warrior Training Center Air Assault Course for FLARNG. A grass airfield, 62 Landing Zones (LZs), and a 229-acre Weinberg Drop Zone (DZ) support aviation and airborne operations. CBJTC currently has an active airfield primarily in support of helicopter operations. The airfield has two grass runways with directions of 070/250 and 010/190 that are located in the Cantonment Area. The 2/111th Aviation Regiment provides airfield operations support

during IDT weekends to include active air traffic control for flight following and radar supported Precision Approach Radar. CBJTC also has the Anderson-Bartlett Flight Landing Strip, an unimproved air strip that can support C-130 field operations and a concrete skid strip for helicopter operations. Both are located on the north portion of the post. CBJTC has restricted airspace, which allows artillery, mortars, and small arms to fire at maximum altitudes and aviation assets to conduct tactical flight training (FLNG 2011b). Aviation operations are conducted in accordance with SOP 95-1.

Table 3. Potential Impacts to Natural Resources from Training Activities at CBJTC

Type Training	Minimum Effect Training Activities	Training Activities with the Potential to Disturb Soils and/or Vegetation
Soldier Skills Training	Small unit infantry tactics Reconnaissance Terrain/map analysis Survival, escape, resistance, & evasion Day or night land navigation training Individual weapons familiarization and qualification Setting up communication links Infiltration Patrolling	Tactical bivouac occupation/displacement Wet weather operations Command post exercises without troops Cover and concealment Field fortifications Battle-focused individual training Mobility and counter mobility Fording operations Bridging and rafting operations
Engineer Training	Engineer reconnaissance	Emplace and clear minefields Emplace obstacles Demolitions training and qualification Cut, fill, and haul (horizontal operations) Breaching operations Clearing operations Construct and maintain roads Construct and maintain main supply routes Nonstandard fixed bridges

Installation Land Use

Training lands can be defined using the following land use categories: improved, semi-improved, and unimproved grounds. Improved grounds are developed areas that have either an impervious surface (e.g., sidewalks, buildings) or landscape plantings that require intensive maintenance and upkeep. Semi-improved grounds are where periodic grading or maintenance is performed for operational reasons (e.g., LZs, wildlife food plots). Unimproved grounds receive little to no grounds maintenance (e.g., streams, wetlands, forests). Land use is summarized for CBJTC in **Table 4**.

Improved grounds include the developed portions of CBJTC, which are primarily located within the central Cantonment Area. However, a few scattered areas of development are found outside this area, which are

associated with transportation and utility corridors and the range complex. Improved grounds make up less than 5 percent of the installation. Semi-improved lands on CBJTC (or 29 percent of the land) include areas that require periodic management or maintenance; they include tree plantations, agricultural lands, previously mined lands, and trails. The remainder of CBJTC (or 66 percent of the land) is classified as unimproved grounds that are used for military training, forestry, wildlife management, and recreation. Unimproved grounds include forests, shrubland, streams, lakes, and wetlands.

Table 4. Land Use on CBJTC

Land Use Category	Description	Area (acres)[2]
Improved Grounds	Developed areas (Cantonment Area, portions of the range complex, and mining spoil areas)	4,944
Semi-Improved Grounds	Pastureland maintained as artillery firing points, landing zones, and drop zones	2,041
	Tree Plantations	16,538
	Trails (~327 miles)	595[1]
Unimproved Grounds	Forested habitat (includes sandhill, hardwood, and natural upland coniferous woodlands)	32,037
	Wetlands (includes saturated forests, marshes, bogs, wet prairies, and ephemeral ponds)	12,310
	Open water	4,531
	Scrub	340

[1] Unpaved road areas assume 15-foot road surface width

[2] The primary source for land use estimates is Florida Natural Areas Inventory (FNAI) 2010a, 2010b. Acreages do not add up to 73,000 acres because GIS data equal 73,336 acres and trails overlay FNAI 2010a, 2010b estimates. Road and trail data were obtained from FLARNG.

Source: FNAI 2010a, 2010b with corrections by CBJTC-ED

2.1.5 Constraints and Opportunities

While there are many constraints to activities on CBJTC, not all of them are applicable for a given situation. For example, a constraint for new building construction may not be a constraint at all - may even be a benefit - for infantry training. Environmental constraints to training include:

- Wildfire risk (**Section 4.5**)
- Federal and state listed species, in particular RCW and gopher tortoise (*Gopherus polyphemus*) (**Section 2.3.4 and 4.7**)
- Special Management Zones (SMZs) and associated wetlands and riparian habitat (**Section 4.3.3**)
- Cemeteries
- Protected cultural resources

Constraints due to military training that can impact natural resources management include:

- Restricted access to Impact Area (permanent)
- Restricted access in active range fans (temporary)

There are no major topographic or soil erosion concerns that limit the military mission on CBJTC with the exception of some of the previously mined areas along the western boundary. No significant new development or military missions are currently planned; thus no opportunity map is provided.

2.2 Physical Environment

2.2.1 Climate

CBJTC lies within the subtropical division of the humid temperate domain and is characterized by high humidity especially in the summer and an absence of extremely cold winters (Bailey 1995). Within Clay County relative humidity is typically about 75 percent (Weatherspoon et al. 1989). The nearest National Climatic Data Center (NCDC) weather station is located in Starke, Florida, which is approximately 3 miles west of the installation. Average temperature and rainfall data for Starke, Florida is provided in **Table 5**. Temperatures range from an average high of 93 degrees Fahrenheit (°F) in July and August to an average low of 43.9°F in January. Average annual precipitation is about 53 inches. About 50 percent of the annual rainfall occurs in the summer (June – September) as a result of afternoon and evening thunderstorms, which can produce 2 to 3 inches of rainfall within a couple hours (Southeast Regional Climate Center [SERCC] 2012, Weatherspoon et al. 1989). Tropical storms are possible between June and November but typically do not generate hurricane-force winds at CBJTC due to its inland location (Weatherspoon et al. 1989).

Table 5. NCDC Monthly Normals for Starke, FL (1971-2000)

Month	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	24-hr Average Temperature (°F)	Average Rainfall (inches)
Jan	65.4	43.9	52.8	3.31
Feb	67.6	45.5	55.1	3.32
Mar	74.2	56.2	61.1	3.87
Apr	79.0	62.0	66.1	2.89
May	85.5	70.1	73.0	3.76
Jun	89.2	75.4	78.2	6.32
Jul	90.9	77.6	80.3	6.28
Aug	90.1	78.3	79.9	6.76
Sep	87.4	74.9	77.7	5.82
Oct	80.7	64.0	70.0	1.95
Nov	73.6	54.7	61.8	2.58
Dec	67.1	47.9	55.1	3.48
Total	**79.2**	**43.9**	**67.6**	**50.34**

Source: SERCC 2012; Starke, Florida NCDC Station # 088527

2.2.1.1 Climate Change on Camp Blanding

Due to Florida's unique ecology and topography any potential impacts resulting from climate change may be particularly acute and affect multiple economic, agricultural, environmental, and health sectors across the state. The impact of climate change on wildlife and habitat is already occurring.

The Intergovernmental Panel on Climate Change (IPCC), a multi-national scientific body, reports that climate change is likely proceeding at a rate where there will be unavoidable impacts to humans, wildlife, and habitat. Given current levels of heat-trapping greenhouse gas emissions, shifts in local, regional, and national climate patterns including changes in precipitation, temperature, increased frequency and intensity of extreme weather events, rising sea levels, tidal fluctuations, and ocean acidification are projected. The current trend of global temperature increase has appeared to accelerate in recent decades, and continued greenhouse gas emissions may result in projected global average increases of 2 - 11.5° F by the end of the century. This apparent change in global climate has the potential to disrupt natural processes; in some areas, climate change may cause significant degradation of ecosystems that provide services such as clean and abundant water, sustainable natural resources, protection from flooding, as well as hunting, fishing and other recreational opportunities. Consequently, climate change is a challenge not only because of its likely direct effects, but also because of its potential to amplify the stress on ecosystems, habitats, and species from existing threats such as exponential increases in surface and ground water use, habitat loss due to increased urbanization, introduction of invasive species, and fire suppression.

At this time, the potential effects of climate change on Florida's lands are just beginning to be studied and are not yet well understood. There is a continuing need for increased information and research to enable adaptive management to cope with potential long-term climate change impacts. CBJTC will work with FFWCC and USFWS as they develop future adaptive management strategies to mitigate potential climate change impacts.

Camp Blanding anticipates climate change impacts to the environmental program in three significant sectors: wildland fire, imperilled species,and invasive species.

Wildland Fire

Long-term wildland fire planning has become complicated due to various effects related to climate change and uncertainties in previously reliable patterns are playing havoc with prescribed fire planning and implementation. As a successful prescribed burning program is in equal parts planning and implementation, the difficulty of predicting those effects through time is beginning to have negative impacts on burn programs on Camp Blanding and throughout the southeast.

The first and most immediate effect of climate change on prescribed fire on Camp Blanding is the loss of “normal”. Rain and drought in the southeast have historically been forecastable conditions with the moisture from tropical rains transitioning into winter cold fronts that keep the ground moist and allow for cooler, less impactful winter fires. This reliable window of lower severity fires normally allows for first-entry burning into areas that have not seen recent fire. With this loss of predictability comes a greater chance that reintroduction of fire to a landscape may result in damage or control issues well beyond prescription.

As the local weather becomes less and less predictable, the tried-and-true methods of conducting a burn on Camp Blanding have become harder to predict and manage. This difficulty in planning can lead to lost opportunities for applying fire to the landscape and result in areas with longer rotations between fire applications. Once routine frequency becomes lost in southern fuels, burns become more difficult and the

severity risk higher. This can often cause a downward spiral of fire in the area making burning more difficult and the chance to miss future burns greater.

The second impact of climate change seen on Camp Blanding's wildland fire program is the long-term shift in burning windows and required weather/fuel conditions that largely effects the implementation aspect of a burn program. This change is subtle in southern fuels, as frequency of fire is the most important aspect of a successful burn program. Each management unit has a desirable range of weather and moisture parameters that will allow for the best possible burn from an ecological perspective, a resource damage perspective, and a safety perspective. Long un-burned fuels need higher moisture and cooler weather to limit ecosystem damage. Well-burned fuels may need higher winds or lower humidities to carry the fire across the extent of the area as well.

In all cases a general trend of weather getting hotter and drier limits the total amount of
productive burning. The current understanding of putting-off a day of burning to wait for a future day with better condition is no longer be a long-term winning strategy. As those put-off days stack up, blocks that miss their burn rotation become more and more common. With fire frequency beginning to slip, implementing the burn program is becoming incrementally more difficult through time. The idea of chasing the perfect ideal may jeopardize achieving "good enough" and therefore more burns are conducted towards the edges of prescription parameters.

Adjusting to erratic burn seasons or seasons with fewer total burnable days will require an increase in total acres burned in a year. To accomplish this, fires will have to be larger or days previously discarded as too marginal or extreme will have to be included as acceptable burn days. In a region where the total yearly burned acres come nowhere near the acres needed for ecological maintenance, the only option for success in the future is larger fires. If crews and equipment aren't increased in lock-step with this option, individual fires will need to have a greater acceptance of severity and potential mortality of overstory as more will need to be
done with less.

Imperiled Species

Climate change impacts to at-risk species are being studied across the globe in studies well beyond the capacity of Camp Blanding's Environmental Division. As such, the installation staff relies on stakeholder and regulator consultations to identify and apply climate change resiliency measures regarding imperiled species. As the science delivers results, Camp Blanding is implementing shifts to imperiled species management and monitoring where reasonable and possible. This includes monitoring for new species not previously documented on Camp Blanding and expanding T&E survey efforts into ecosystems not considered suitable habitat in the past.

Several rare and protected species rely upon intermittent ponds for breeding success and survival. Shifts in rain amount and time-of-year mean hydroperiods typical for healthy intermittent ponds are often beyond the limits favorable for these species. As some ephemeral ponds become permanent or, alternatively, dry up entirely, the impacts to rare herpetofauna will be severe. Under the CCAA and this plan Camp Blanding has implemented a large-scale monitoring program to categorize exactly the boundaries of local survival to identify trends, develop of future management projects, and inform the NEPA process regarding facility and range development.

Invasive Species

Camp Blanding's portion of Florida is typically considered to be in a humid subtropical climate zone, but the invasive species known to plague the southern part of the state's tropical environments are being documented well north of the historic zone boundaries. Many of the plants and animals invading tropical Florida represent a substantial threat to the ecosystems and habitats of Camp Blanding and therefore identifying these noxious pests for monitoring and eradication has become a significant priority for staff.

Infestation by invasive plants previously held to the tropics by climate realities can alter fire regimes, impact water and surface water resources, compete with imperiled species, hybridize and erase imperiled species, and otherwise draw resources away from other aspects of natural resource management.

2.2.2 Topography

CBJTC lies in western Clay County within the Trail Ridge physiographic region of the state. The Trail Ridge is an ancient coastal terrace, which is part of the oldest terrestrial formation in Florida, dating from the early Pleistocene about 25 million years ago. These formations traverse CBJTC from the northwest boundary in a southeasterly direction. This ridge is located on top of a calcium carbonate reef platform, which results in the chemical interaction between acidified waters and calcium-rich rocks creating a land surface marked by sinkholes (Webb 1990).

The land surface of CBJTC is level to gently rolling, with only very slight sloping areas in the southern portion of the site. Elevations on CBJTC range from approximately 40 feet above mean sea level (amsl) to 285 feet amsl (or 12 meters to 87 meters asml). Elevations of 40 feet amsl generally occur along creek channels, while elevations of 200 feet amsl and higher are characteristic of the sandhill areas located south of Kingsley Lake. The highest point in Clay County is on the summit of the Trail Ridge at an elevation of 285 feet asml, just south of Kingsley Lake. East of the Trail Ridge, the land slopes to sea level at the St. Johns River. South of the Trail Ridge, the highland fans out into a wide area of sandhills dotted with lakes (see **Map 3**).

2.2.3 Geology

Clay County is geomorphically situated in the northern or proximal zone of northeastern peninsular Florida. The late Tertiary, Late Pliocene Cypresshead Formation occurs in the central portion of Clay County. The Cypresshead Formation consists of quartz sands ranging from fine to very course with common occurrences of quartz gravel. This formation was deposited in a shallow, nearshore setting. Undifferentiated Quaternary Pleistocene sands overlay the Cypresshead Formation to form the Trail Ridge in the western portion of Clay County. The Trail Ridge sands contain economically important ore grade heavy-mineral concentrations, and were deposited as beach ridges and sands. CBJTC is underlain primarily by undifferentiated quaternary sands; however, in some areas the Cypresshead Formation is near the surface (Scott et al. 2001, Scott 2001).

In the western portion of the county, the Cypresshead sands are underlain by the Hawthorn Formation. The Hawthorn Group (100 to 300 feet) is of Miocene age and composed of many discontinuous lenses of clay, quartz sand, carbonates, and phosphates. The phosphates, which are found throughout the deposits, give the group a low permeability (Scott et al. 2001, Weatherspoon et al. 1989). The Hawthorn Formation is underlain by the Oligocene Suwannee Limestone Formation and the Eocene Ocala Limestone and Avon Park Formations. The Ocala Limestone and Avon Park Formations are part of the Floridan Aquifer, which is one of the most productive aquifers in the world (Scott 2001, Scott et al. 2001, Weatherspoon et al. 1989).

A large portion of the region has been mined for heavy minerals (Weatherspoon et al. 1989). Mining activities on CBJTC began in the late 1940s and have been concentrated on the western boundary of the property. The Du Pont Corporation began leasing property on CBJTC in the mid-1940s for mineral sand

mining and ceased in 2008. During this time, they mined ilmenite, zircon, and staurolite, which were used for military and commercial applications.

2.2.4 Soils

According to the Natural Resources Conservation Service (NRCS) (Weatherspoon et al. 1989, NRCS 2010), 36 soil series occur either singularly or in combination with other series in 50 distinct soil mapping units that have been identified on CBJTC (**Table 6** and **Map 4**). Of the 50 soil map units, 27 of them are considered hydric soils. NRCS defines hydric soils as soils that are sufficiently wet in the upper part to develop anaerobic conditions during the growing season (NRCS 2012). Soils within CBJTC are divided into three major groups based on their location on the landscape.

- Soils on sandy ridges occur on approximately 32 percent (21,978 acres) of CBJTC. They are common in the southern sandhill areas of the installation. Soil map units in this category include Centenary, Kershaw, Ortega, Penney, and Troup.
- Soils in pine flatwoods, slight knolls, and in transitional areas between uplands and flatwoods occur on 55 percent (38,050 acres) of the installation. Soil map units in this category include Albany, Blanton, Goldhead, Hurricane, Leon, Lynn Haven, Mandarin, Meadowbrook, Neilhurst, Newnan, Ocilla, Ona, Osier, Pelham, Plummer, Pottsburg, Ridgeland, Ridgewood, Sapelo, Scranton, Solite, Surrency, and Wesconnett.
- Soils within floodplains occur on 12 percent (8,505 acres) of the installation. Soil map units in this category include Allanton, Ousley, Pamlico, and Rutlege.

Less than 1 percent (760 acres) of the installation is considered urban land and/or excavated areas (quartzipsamments or Arents sandy soil). The remaining land is characterized as open water.

When determining the potential for soil erosion or compaction, it is important to consider the ability of the soil to withstand or recover from the effects of military training that occur at CBJTC. Erosion can result in sedimentation of streams and loss of productivity of training lands. Unchecked erosion can eventually impact infrastructure and ability to train. Intensive training can also cause disruption to and compaction of the soil surface. There are several indices that incorporate the physical and chemical factors into numeric scales or broad categories that are more easily related to the potential effects of military training and land management activities: K-factor, Land Use Capability Class, and Hydrologic Soil Groups. An in-depth review of these factors can be found in the *Soil Survey for Clay County, Florida* (Weatherspoon et al. 1989).

Soil Erodibility

The K-factor indicates a soils susceptibility to water erosion. A K-factor or “erodibility factor” of 0.34 or greater indicates a highly erodible soil. Soils at CBJTC range between a K-factor of 0.1 to 0.32. A soil map unit is highly erodible from wind if the wind erodibility index value is 3 or less. Soils at CBJTC are all classified as 1 or 2; thus, they have the potential to be highly susceptible to wind erosion when they are not vegetated. One area on CBJTC with visible wind erosion concerns is the previously mined Du Pont lease area in the western portion of the installation (see **Section 4.4.5** for rehabilitation guidelines for this area). However, in general, soil erosion resulting from military training at CBJTC is rather limited because slopes are generally minimal, tracked and wheeled vehicle usage is low, and revegetation of bare areas is relatively easy due to an abundance of rainfall and warm temperatures (Hall et al. 1997).

Land Use Capability Classification System

Since intensive tracked vehicle use can disrupt and compact the soil (similar in ways to the effects of cultivation), the Land Use Capability Classification System can be used as an index for military training. In this system, the class numerals (1 - 8) indicate progressively greater limitations and narrower choices for practical use. The subclass letter (e, w, or s) designates limitations due to erosion (e), water (w), and shallowness, drought, or stoniness (s).

The capability class/subclasses from the soil survey reveal that only 1 percent of CBJTC requires very careful management due to risk of erosion (Albany fine sand, 0 to 5 percent slopes). Approximately 48 percent of the installation requires careful management due to being shallow, droughty, or stony, while 49 percent requires special conservation practices due to wetness (NRCS 2010, Weatherspoon et al. 1989). Most soils on CBJTC require special treatment and consideration when planning for land use and rehabilitation.

Hydrologic Soil Groups

Hydrologic soil group classifications refer to soils grouped by their runoff-producing characteristics. Since infiltration rate generally is inversely related to runoff and erosion, the hydrologic soil group is an indirect index to site erodibility. Group A soils have a high infiltration rate when thoroughly wet and have a low runoff potential (i.e. they are the least erodible). Group B soils have moderate infiltration rates when thoroughly wet. Group A and Group B soils are most desirable for military training activities. Group C soils have slow infiltration rates when thoroughly wet and are borderline for military training activities. Group D soils have a very slow infiltration rate when thoroughly wet and are marginally suitable for military training activities. Some soils are assigned two soil groups. For example, B/D indicates the soil may have a seasonally high water table, but also drain easily. Thus, this soil type would need further onsite investigation to determine its hydrologic group in a particular location. The soils on CBJTC are distributed across all groups with 40 percent in Group A, less than 1 percent in Group B, 24 percent in Group C, 10 percent in Group D, and 25 percent in Group B/D (NRCS 2010, Weatherspoon et al. 1989).

Woodland Management and Productivity

Approximately 316,500 acres (approximately 80 percent) of Clay County and more than 40,000 acres of CBJTC is forested. Most woodland areas are on Hurricane, Leon, Pottsburg, and Sapelo soils on the flatwoods; Penney, Centenary, and Ortega soils on the sand ridges; and Rutlege, Osier, and Meadowbrook soils on the floodplains. In this system, the numerical value indicates a progressively greater potential for woodland productivity and less limitations. The subclass letter (w or s) indicates excessive water either seasonally or year-round and dry, sandy soil. Approximately 53 percent of the soils are limited by excessive water and 46 percent are hindered by dry sandy soil.

Prime Farmland

Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Prime farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops using acceptable farming methods. None of the soil types found on CBJTC are designated as prime farmland soils (NRCS 2010).

Table 6. NRCS Soil Map Units on CBJTC

Soil Map Unit	Description	Acres	Hydric Soil	K-factor	Wind Erodibility Index	Land Use Capability Class	Hydrologic Soil Group	Woodland Productivity
1	Albany fine sand, 0 to 5 percent slopes	844.0	No	0.24	2	3e	C	11w
2	Blanton fine sand, 0 to 5 percent slopes	194.4	No	0.2	2	3s	A	11s
3	Hurricane fine sand, 0 to 5 percent slopes	9766.0	No	0.1	2	3w	C	11w
4	Ocilla loamy fine sand, 0 to 5 percent slopes	68.9	No	0.24	2	3w	C	11w
5	Penney fine sand, 0 to 5 percent slopes	5878.2	No	0.1	2	4s	A	8s
6	Mandarin fine sand	4178.3	No	0.15	2	6s	C	8s
7	Centenary fine sand, 0 to 5 percent slopes	4081.0	No	0.1	2	3s	A	11s
8	Sapelo fine sand	542.8	Yes	0.24	2	4w	D	10w
9	Leon fine sand	7049.1	Yes	0.15	2	4w	B/D	8w
10	Ortega fine sand, 0 to 5 percent slopes	3592.6	No	0.1	2	3s	A	10s
11	Allanton and Rutlege mucky fine sands, depressional	775.3	Yes	0.17	2	7w	D AND B/D	2w
14	Ortega-Urban land complex, 0 to 5 percent slopes	283.4	No	0.1	2	-	A	-
15	Quartzipsaments, excavated	145.1	No	-	-	-		-
16	Hurricane-Urban land complex, 0 to 5 percent slopes	107.5	No	0.1	2	-	C	-
17	Plummer fine sand	26.0	Yes	0.015	2	4w	B/D	11w
18	Ridgewood fine sand, 0 to 5 percent slopes	1615.1	No	0.1	2	4s	C	10w
19	Osier fine sand	167.0	Yes	0.1	2	5w	B/D	11w
20	Scranton fine sand	60.3	Yes	0.1	2	5w	B/D	11w
21	Goldhead fine sand	3.3	Yes	0.24	2	3w	B/D	10w
22	Pelham fine sand	18.0	Yes	0.24	2	3w	B/D	11w
24	Urban land	176.0	No	-	-	-	-	-

Table 6. NRCS Soil Map Units on CBJTC

Soil Map Unit	Description	Acres	Hydric Soil	K-factor	Wind Erodibility Index	Land Use Capability Class	Hydrologic Soil Group	Woodland Productivity
27	Pamlico muck	421.4	Yes	0.1	2	7w	D	2w
29	Rutlege-Osier complex, frequently flooded	3011.5	No	0.17	2	5w	B/D	7w
30	Arents, sandy	47.6	No	-	2	-	B	-
31	Pottsburg fine sand	1904.2	Yes	0.15	2	4w	B/D	8w
32	Blanton fine sand, 5 to 8 percent slopes	214.4	No	0.2	2	4s	B	11s
34	Penney fine sand, 5 to 8 percent slopes	715.0	No	0.1	2	6s	A	8s
36	Ortega fine sand, 5 to 8 percent slopes	64.3	No	0.1	2	4s	A	10s
37	Ridgewood fine sand, 5 to 8 percent slopes	36.7	No	0.1	2	4s	C	10w
38	Surrency fine sand, frequently flooded	10.6	Yes	0.15	2	6w	D	11w
39	Meadowbrook sand, frequently flooded	307.6	Yes	0.15	2	6w	B/D	10w
40	Ousley fine sand, occasionally flooded	118.8	Yes	0.1	2	3w	C	10s
41	Albany fine sand, 0 to 5 percent slopes, occasionally flooded	27.8	Yes	0.24	2	3w	C	11w
42	Osier fine sand, occasionally flooded	171.7	Yes	0.1	2	5w	B/D	11w
43	Pamlico muck, frequently flooded	54.9	Yes	0.1	2	7w	D	7w
46	Plummer fine sand, depressional	61.8	Yes	0.32	2	5w	B/D	2w
47	Newnan fine sand	118.2	No	0.24	2	3s	C	10w
49	Sapelo-Meadowbrook frequently flooded, complex	7.9	Yes	0.24	2	6w	D AND B/D	10w
50	Leon fine sand, frequently flooded	696.6	Yes	0.15	2	6w	B/D	8w
51	Pottsburg fine sand, occasionally flooded	32.4	Yes	0.15	2	4w	B/D	8w
54	Troup sand, 0 to 5 percent slopes	118.6	No	0.2	2	3s	A	8s
56	Kershaw sand, 0 to 8 percent slopes	7528.3	No	0.1	1	3s	A	8s
58	Allanton fine sand, frequently flooded	4123.7	Yes	0.1	2	5w	D	10w

Table 6. NRCS Soil Map Units on CBJTC

Soil Map Unit	Description	Acres	Hydric Soil	K-factor	Wind Erodibility Index	Land Use Capability Class	Hydrologic Soil Group	Woodland Productivity
59	Lynn Haven fine sand	1607.9	Yes	0.15	2	4w	B/D	11w
60	Ridgeland fine sand	113.1	Yes	0.15	1	3w	B/D	10w
61	Wesconnett fine sand, frequently flooded	1597.0	Yes	0.15	2	4w	D	11w
62	Neilhurst fine sand, undulating	5016.5	No	0.1	1	6s	A	8s
63	Solite fine sand	1409.3	Yes	0.1	2	4w	B/D	8w
64	Ona fine sand	182.7	Yes	0.15	2	3w	B/D	10w
CBJTC Total Acreage		**69,292.8****						

** CBJTC is approximately 73,000. Acreage not accounted for in this table is designated as open water.

Source: NRCS 2010, Weatherspoon et al. 1989

2.2.5 Water Resources

Water resources considered in this INRMP include both surface and groundwater. Surface water resources are lakes, rivers, and streams and are important for a variety of reasons including ecological, economic, recreational, and human health. Groundwater is an essential resource in many areas because it is used as a source of potable water, for agricultural irrigation, and for industrial purposes.

Florida Department of Environmental Protection (FDEP) manages the quality and quantity of water resources in Florida through its association with the five Water Management Districts (WMDs). The WMDs administer flood protection programs and develop water management plans. Regulatory programs for consumptive use of water, aquifer recharge, well construction, and surface water management have been delegated to the WMDs. As part of the surface water program, the WMDs administer FDEP's storm water management program as well. Clay County is located in the St. John's River WMD.

Groundwater Resources

CBJTC is underlain by two aquifer systems: surficial aquifer and Floridan aquifer. The surficial aquifer system is primarily composed of unconsolidated sands that are under an unconfined condition. Precipitation is the primary source of water entering this system, although in some areas of Florida water leaks upward from the underlying Floridan aquifer when the clayey confining unit separating these aquifers is thin or absent. The majority of the water moves laterally within the system before discharging into a surface waterbody; however, some water does percolate downward into the Floridan aquifer in some areas. Within Clay County, groundwater flows to the east toward the Atlantic Ocean. Freshwater withdrawals from the surficial aquifer in Florida during 1985 were estimated to be approximately 361 million gallons per day, and were used for the following purposes: public supply (47 percent), domestic and commercial use (48 percent), agriculture (4 percent), and industrial, mining, and thermoelectric-power uses (1 percent) (Miller 1990).

The Floridan aquifer system consists of limestone and dolomite, and is the most productive of the aquifers within Florida. During 1985, a total of 3 billion gallons per day were pumped from this aquifer for multiple purposes (Miller 1990). The Floridan Aquifer is the primary source of potable water in the area. It is recharged partly by lakes and by seepage from the surficial aquifer through confining beds in areas where the potentiometric surface of the aquifer is lower than that of the surficial aquifer. Groundwater levels fluctuate in response to variations in rainfall and surface water levels in nearby lakes and streams. Groundwater flow in the vicinity of CBJTC occurs generally to the east and northeast towards the St. Johns River (Motz et al. 1991, Miller 1990).

According to Motz et al. (1993), there is also an intermediate aquifer within the Hawthorn Formation (see **Section 2.2.3**) that is semi-confined by clay layers. This artisan aquifer occurs between the primary aquifers and provides freshwater to some residential areas within Clay County (Annable et al. 1996).

Surface Waters

CBJTC is situated within five watersheds: North Fork of Black Creek watershed (US Geological Survey [USGS] Hydrologic Unit Code [HUC] #0308010310), South Fork of Black Creek watershed (HUC #0308010309), Levys Prairie watershed (HUC #0308010305), Santa Fe River Headwaters watershed

(HUC #0311020601), and New River watershed (HUC #0311020602). These watersheds initiate at the topographic high in the west-central portion of the installation (see **Map 5**). North Fork and South Fork of Black Creek and Levys Prairie watersheds drain off-Post to the north, east, and south, respectively, eventually draining into the St. John's River, which occurs along the eastern boundary of Clay County. The Santa Fe River Headwaters and New River watersheds drain off-Post to the west and south, respectively, into the Santa Fe River, which flows westward ultimately discharging into the Suwannee River northwest of Gainesville.

Approximately 175 miles of streams and 4,585 acres of lakes and ponds occur within CBJTC. The most significant waterbodies within CBJTC (from largest to smallest) include Kingsley Lake (1,620 acres), Lowry Lake (1,237 acres), Varnes Lake (298 acres), Stevens Lake (222 acres), Magnolia Lake (203 acres), Blue Pond (198 acres), Whitmore Lake (138 acres), and Perch Pond (19 acres).

The primary surface water features in the northern part of CBJTC are North Fork Black Creek, which has its headwaters in Kingsley Lake, and Bull Creek. Both of these creek systems drain toward the north-northeast. Kingsley Lake is located in the west-central part of CBJTC, and is the largest lake on the installation, encompassing approximately 1,620 acres. North Fork Black Creek and Kingsley Lake are designated as Outstanding Florida Waters (OFWs) through the "Special Waters" rulemaking that is outlined in rule 62-302.700 of the Florida Administrative Code (FAC). South Fork Black Creek, which has its headwaters in Stevens Lake (220 acres), is the primary surface water drainage feature in the central part of CBJTC. South Fork Black Creek drains toward the east within CBJTC boundaries, and then turns to the northeast to join North Fork Black Creek near Middleburg, Florida where it forms Black Creek. The Santa Fe River Headwaters and New River Watersheds encompass much of the former Du Pont mining area, and include the headwaters of the Santa Fe River and Alligator Creek, respectively. Finally, the Levys Prairie watershed encompasses the interconnected lakes in the southern part of CBJTC. These lakes are hydrologically connected to a chain of lakes south of CBJTC. This watershed is part of the Upper Etonia Creek Drainage Basin, which encompasses portions of Alachua, Bradford, Clay, and Putnam Counties. None of the surface water features are listed on the Clean Water Act (CWA) 303(d) list of impaired waters for Florida (FDEP 2020).

Several lakes within the Upper Etonia Creek Drainage Basin have been experiencing a decline in water levels over the past few decades. Studies have been conducted to examine the potential causes for this decline. Motz and Heaney (1993) identified rainfall, lake-bottom leakage, and regional water level declines within the Floridan aquifer. Annable et al. (1996) conducted a follow up study to assess the interactions between the lakes and the surficial aquifer within the basin, which included Lowry Lake (also called Sandhill Lake), Blue Pond, and Magnolia Lake. Inflow from the surficial aquifer was found to be a small percentage of the overall lake water budget. A more detailed analysis was recommended to better examine these interactions (Annable et al. 1996).

On CBJTC, Lowry Lake receives surface water inflow from Blue Pond via a creek channel, from the spring located northeast of the lake, and from the surrounding surficial aquifer. Lowry Lake loses water to surface water outflow and vertical leakage to the underlying upper Floridan aquifer. Water levels in Lowry Lake are very stable. Magnolia Lake receives surface water inflow from Lowry Lake and surficial aquifer inflow from the north; it loses water via leakage to the upper Floridan aquifer (Annable et al. 1996, Motz and Heaney 1993). See below for more information on regional groundwater aquifers.

The 650-acre Brooklyn Lake, located south of CBJTC in the city of Keystone Heights, is one of the lakes that has experienced a large decline in water levels. Surface water from CBJTC flows south toward this lake. In comparison to the lakes on CBJTC, it has a very limited confining layer, which makes this lake more likely to lose water as aquifer levels decline. Groundwater extraction has been cited as one of the primary causes (FLARNG 2011). CBJTC has been actively involved with the City of Keystone Heights since 1997 to help find a way to restore water levels (see **Section 3.7**).

Floodplains

Floodplains are generally areas of low, level ground present on one or both sides of a stream channel that are subject to periodic inundation by flood waters. Floodplains are typically the result of lateral erosion and deposition that occurs as a river valley is widened. The porous material that composes the floodplain is conducive to retaining water that enters the soil via flooding events and elevated groundwater tables. Inundation dangers associated with floodplains have prompted federal, state, and local legislation limiting the development in these areas to recreation, agriculture, and preservation activities. Floodplains are regulated by the Federal Emergency Management Agency (FEMA) with standards outlined in 44 CFR Part 60.3. EO 11988 (Floodplain Management) requires agencies to assess the effects that their actions may have on floodplains and to consider alternatives to avoid adverse effects and incompatible development on floodplains. FEMA has identified 100-year floodplains throughout CBJTC that are associated with the various surface water features as shown in the Flood Insurance Rate Maps (FIRMs) 1200640100D, 1200640115D, 1200640120D, 1200640200D, 1200640225D, 1200640325D, and 1200640350D (FEMA 2014).

Wetlands

EO 11990 (Protection of Wetlands) requires federal agencies to take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the beneficial values of wetlands. Wetlands are an important natural system because of the diverse biological and hydrologic functions they perform. These functions may include water quality improvement, groundwater recharge, pollution treatment, nutrient cycling, the provision of wildlife habitat and niches for unique flora and fauna, storm water storage, and erosion protection. The United States Army Corps of Engineers (USACE) defines wetlands as

> "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328)."

Wetlands are protected as a subset of the "waters of the United States" under Section 404 of the CWA. Jurisdictional waters of the United States are areas regulated under the CWA and may also include coastal and inland waters, lakes, rivers, ponds, streams, intermittent streams, vernal pools, and other waters, that if degraded or destroyed could affect interstate commerce. For an area to be classified as a wetland, three conditions must be present: (1) wetland hydrology; (2) hydric soil; and (3) hydrophytic vegetation. Areas that may be periodically wet, but that do not meet the requisite criteria, are not classified as wetlands.

Section 404 of the CWA authorizes the USACE to issue permits for the discharge of dredged or fill material into the "waters of the United States," including wetlands. Section 401 of the CWA gives the State of Florida

the authority to regulate, through the state water quality certification program, proposed federally-permitted activities that may result in a discharge to water bodies, including wetlands. Section 373.414 of the Florida Statutes (F.S.) sets forth provisions that give the State jurisdiction over those areas that are delineated wetlands, including all isolated wetlands (i.e., non-jurisdictional wetlands). Further discussion on regulatory authority and protection of wetlands is included in **Section 4.3.1**.

Wetland surveys have been conducted at CBJTC on a project-by-project basis. However, no installation-wide survey has been conducted. To provide a general summary of wetland coverage on CBJTC, a summary of wetlands on CBJTC identified in the National Wetland Inventory (NWI) is presented in **Table 7** and illustrated in **Map 6**. Natural vegetation communities, including wetland communities, have also been mapped by FNAI. See **Section 2.3.2** for more detail on FNAI wetland community types mapped within CBJTC.

Table 7. Summary of NWI Wetlands within CBJTC

Wetland Type	Cowardin Classification	Description	Acres
Lake	L1UBHx	Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded, Excavated	4,476
	L2UB	Lacustrine, Littoral, Unconsolidated Bottom	89
Freshwater Pond	PAB3	Palustrine, Aquatic Bed, Rooted Vascular	155
	PEM1	Palustrine, Emergent, Persistent	647
	PUBH	Palustrine, Unconsolidated Bottom, Permanently Flooded	409
Freshwater Emergent Wetland	PEM5	Palustrine, Emergent, Phragmites	1
Freshwater Forested Wetland	PFO1	Palustrine, Forested, Broad-leaved Deciduous	1,117
	PFO2	Palustrine, Forested, Needle-leaved Deciduous	11
	PFO3	Palustrine, Forested, Broad-leaved Evergreen	1,050
	PFO4	Palustrine, Forested, Needle-leaved Evergreen	654
	PFO6	Palustrine, Forested, Deciduous	1,403
	PFO7	Palustrine, Forested, Evergreen	1,234
Freshwater Scrub-Shrub Wetland	PSS1	Palustrine, Scrub-Shrub, Broad-leaved Deciduous	20
	PSS3	Palustrine, Scrub-Shrub, Broad-leaved Evergreen	501
	PSS6	Palustrine, Scrub-Shrub, Deciduous	40
	PSS7	Palustrine, Scrub-Shrub, Evergreen	58
		Total	**11,865**

Source: USFWS 2010, Cowardin et al. 1979

2.3 Ecosystem and Biotic Environment

2.3.1 Ecosystem Classification

CBJTC is located in the US Ecoregion – Humid Temperate Domain – Subtropical Division – Outer Coastal Plain Mixed Forest Province (Bailey 1995), which is equivalent to the USEPA Level II Ecoregion[1] – Eastern Temperate Forests – Mississippi Alluvial and Southeast US Coastal Plains (Commission for Environmental Cooperation [CEC] 1997). Outer Coastal Plain Mixed Forest Province covers the flat and irregular coastal plains along the Atlantic Ocean and Gulf of Mexico, including an area from as far north as Maryland and as far west as eastern Texas. The region is dominated by flat plains, but is also a diverse region containing barrier islands, coastal lagoons, swamps, marshes and numerous lakes (Bailey 1995).

Based on USEPA ecoregions mapping, CBJTC is located in the Level III Southern Coastal Plain ecoregion (75). More specifically, the installation spans two Level IV ecoregions, which include the Central Florida Ridges and Uplands (75c) and Sea Island Flatwoods (75f) (Griffith et al. 2011). The Southern Coastal Plain was historically covered by an assortment of forest communities that included longleaf pine (*Pinus palustris*), slash pine (*Pinus taeda*), pond pine (*Pinus serotina*), American beech (*Fagus grandifolia*), sweetgum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), white oak (*Quercus alba*), and laurel oak (*Quercus laurifolia*). However, the region is now mostly slash and loblolly pine with oak-gum-cypress forest in some low lying areas.

2.3.2 Vegetation

Natural communities at CBJTC are largely influenced by soil drainage. Although most soils are sandy in texture, some in low-lying swampy areas contain a significant organic matter component (see **Section 2.2.4** for soils information). The very poorly drained soils often have standing water during wet seasons and generally support cypress-dominated communities (cypress ponds) and mixed hardwoods in wet swamps or river and stream bottomlands. Scattered pine may occur in these communities, but are more likely to occur in adjacent very-poorly drained soils that are dominated by various "bay" species but seldom have standing water. These wetland communities support many wildlife species and provide water quality protection to the rivers and streams that flow off CBJTC (FLNG 2005).

Poorly to moderately drained soils cover much of the forested land at CBJTC. These soils support mesic hammocks of mixed hardwoods and pine-hardwood communities, as well as the extensive pineland (flatwoods) forests dominated by longleaf and slash pine. Natural vegetation in the mesic hammocks is a mixture of hardwoods and shrubs, dominated by laurel, live and water oaks, several bays and hickories, sweetgum, and mature pines, especially loblolly and pond pine. The mixed hardwood-pine forests represent stages in ecological succession in which naturally regenerated pines are gradually replaced by hardwoods. The pineland forests grade from poorly drained flatwoods with dense bay understories to well-drained uplands with longleaf pine and saw palmetto/wiregrass understories or oak hammocks (FLNG 2005). For

[1] Ecoregions are identified through the analysis of the patterns and the composition of biotic and abiotic features, such as geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. The relative importance of each characteristic varies from one ecological region to another regardless of the hierarchical level. Level I is the coarsest level, while Level IV is the most detailed level.

more details on CBJTC forest stands, their history and their desired future condition, refer to the *FRMP for CBJTC* (FLNG 2005) included in **Appendix F**.

FNAI has identified and mapped natural communities in Florida based on their landscape position, vegetation composition, soil conditions, hydrology, and fire regime (FNAI 2010a). When the natural community type is ambiguous for an area, a broader level category is applied to the area. FNAI defines a natural community as "a distinct and recurring assemblage of populations of plants, animals, fungi, and microorganisms naturally associated with each other and their physical environment."

A total of 16 natural communities and 8 altered land types are found on CBJTC (FNAI 2010b). Approximately 63 percent of the installation is composed of natural communities, including four rare global and/or state community types. Rare communities include sandhill (GS/S2), scrub (G2/S2), upland mixed woodland (G2/S2), and wet prairie (G2/S2)[2]. Natural communities and other land cover at CBJTC may be grouped into three broad categories: Mesic to Xeric Natural Upland Communities, Forested and Non-Forested Natural Wetland Communities, and Altered Land. The most abundant natural community is the sandhill community (20 percent of CBJTC), while tree plantations are the most abundant altered land cover type (22 percent of CBJTC). Brief descriptions of the natural communities and other land cover found on CBJTC are summarized in **Table 8** and illustrated in **Map 7**. For more detailed information on the natural communities, including pictures, refer to FNAI's *Guide to Natural Communities of Florida 2010 Edition* available at http://www.fnai.org/.

Table 8. Natural Communities and Altered Land Cover Types within CBJTC

Community / Land Cover Type	Description	Acres	Percent Cover
Natural Upland Communities			
Sandhill	Xeric upland savanna of widely spaced longleaf pine and/or turkey oak (*Quercus laevis*) with wiregrass understory, deep sand substrate, and frequent fire (1 to 3 years). This natural community (G3/S2) is found in the Panhandle to central Florida.	14,676	19.9
Mesic Flatwoods	Characterized by flatland with sand substrate, frequent fire (2 to 4 years) and mesic woodland with an open pine canopy, and a layer of low shrubs and herbs. Common species include longleaf pine and/or slash pine, saw palmetto (*Serenoa repens*), gallberry (*Illex glabra*), dwarf live oak (*Quercus minima*), and wiregrass (*Aristida stricta*). This natural community (G4/S4) is found throughout Florida with the exception of the extreme southern peninsula and Keys.	8,095	11

[2] **G2** = Imperiled globally because of rarity or vulnerability to extinction due to some natural or man-made factor; **G3** = either very rare and local throughout its range or found locally in a restricted range or vulnerable to extinction from other factors; **S2** = Imperiled in Florida because of rarity or vulnerability to extinction due to some natural or man-made factor.

Table 8. Natural Communities and Altered Land Cover Types within CBJTC			
Community / Land Cover Type	**Description**	**Acres**	**Percent Cover**
Upland Mixed Woodland	Mesic-xeric upland with loamy soils and open to partially closed canopy over an open understory of mixed herbs and scattered shrubs that experiences fire at a variable interval (2 to 20 years). Species include a mixture of southern red oak (*Quercus falcata*), mockernut hickory (*Carya tomentosa)*, and longleaf or shortleaf pine (*Pinus enchinata*) with other mixed hardwoods and infrequent wiregrass. This natural community (G2/S2) is found in the central Panhandle to extreme northern central Florida.	6,483	8.8
Scrub	Xeric upland with deep sand substrate, rare to occasional fire (5 to 20 years), and open or dense shrubland with or without a pine canopy consisting of sand pine (*Pinus clausa*) and/or scrub oaks and/or Florida rosemary (*Ceratiola ericoides*). This natural community (G2/S2) is found throughout Florida with the exception of the extreme southern peninsula and Keys.	340	0.5
Xeric Hammock	Xeric upland community with a deep sand substrate and a closed canopy of evergreen hardwoods including sand live oak (*Quercus geminata*) and saw palmetto that experience rare or no fire. This natural community (G3/S3) is found primarily in the eastern Panhandle to central Florida.	74	0.1
Upland Hardwood Forest	Mesic upland community with sand/clay and/or calcareous substrate and a closed deciduous or mixed deciduous / evergreen canopy that experiences rare or no fire. Common species include American beech, southern magnolia, hackberry (*Celtis* spp.), swamp chestnut oak (*Quercus michauxii*), white oak, horse sugar (*Symplocos tinctoria*), flowering dogwood (*Cornus florida*), and mixed hardwoods. This natural community (G5/S3) is found primarily in the Panhandle to central Florida.	57	0.1
Natural Wetland Communities			
Freshwater Wetland Forested Mixed	Floodplains or depressions dominated by a mix of hydrophytic coniferous and hardwood trees	4,961	6.7
Open Water	Natural streams, lakes, and rivers.	3,961	5.4
Wet Flatwoods	Characterized by flatland with sand substrate, frequent fire (2 to 4 years) for grassy wet flatwoods and 5 to 10 years for shrubby wet flatwoods, seasonally inundated, closed to open pine canopy with grassy or shrubby understory. Common species include slash pine, pond pine, large gallberry (*Illex coriacea*), fetterbush (*Lyonia lucida*), sweetbay (*Magnolia virginiana*), cabbage palm (*Sabal palmetto*), wiregrass, toothache grass. This natural community (G4/S4) is found throughout Florida with the exception of the extreme southern peninsula and Keys. Characterized as hydric pine flatwoods within CBJTC.	3,559	4.8

Table 8. Natural Communities and Altered Land Cover Types within CBJTC

Community / Land Cover Type	Description	Acres	Percent Cover
Freshwater Mixed Wetland Hardwoods	Floodplains or depressions dominated by hydrophytic hardwood trees.	1,876	2.5
Mixed Scrub-Shrub Wetland	Non-forested wetlands with a short hydroperiod that are dominated by shrubby palustrine plant communities, grasses, sedges, and/or titi (*Cyrilla* spp).	855	1.1
Freshwater Marshes	Non-forested wetlands with a long hydroperiod that are dominated by grasses, sedges, broadleaf emergents, floating aquatics, or shrubs.	380	0.5
Wet Prairie	Characterized by flatland with sand or clayey sand substrate that is usually saturated, but only occasionally inundated. This treeless, dense herbaceous community with few shrubs experiences frequent fire (2 to 3 years). Common species include wiregrass, blue maidencane (*Amphicarpum muhlenbergianum*), cutthroat grass (*Panicum abscissum*), wiry beaksedges (*Rhynchospora* spp.), flattened pipewort (*Eriocaulon compressum*), toothache grass (*Ctenium aromaticum*), pitcherplants (*Sarracenia* spp.), and coastal plain yelloweyed grass (*Xyris ambigua*). This natural community (G2/S2) is found throughout Florida with the exception of the extreme southern peninsula and Keys.	332	0.4
Cypress	A type of freshwater forested wetland that is dominated by cypress and has a long hydroperiod.	269	0.4
Bay Swamp	A specific variant of the baygall (GS/S4) community that is characterized as a large or small peat filled forested depression dominated by bay species that experience rare or no fire. Bay swamps are found mainly in the eastern Panhandle and central Florida.	144	0.2
Freshwater Non-Forested Wetlands (Other)	Includes floating/emergent aquatic vegetation.	13	<0.1
	Total Natural Communities	**46,075**	**62.4**
Altered Land Cover Types			
Tree Plantations	Areas altered by silvicultural activities. Tree plantations on CBJTC land are composed of coniferous trees.	17,078	23.1
Extractive	Areas include strip mines and spoil areas.	2,948	4.0
High Intensity Urban	This land category consists of medium density residential areas, and commercial, industrial and institutional land uses.	2,679	3.6

Table 8. Natural Communities and Altered Land Cover Types within CBJTC

Community / Land Cover Type	Description	Acres	Percent Cover
Pasture – Improved	Areas cleared of their native vegetation and that have been planted with bahiagrass (*Paspalum notatum*) and to a lesser extent with Bermudagrass (*Cynodon dactylon*) or pangolagrass (*Digitaria eriantha*). Weedy native species are often common and include dogfennel (*Eupatorium capillifolium*), many species of flatsedge (*Cyperus* spp.), carpetgrasses (*Axonopus* spp.), crabgrasses (*Digitaria* spp.), and rustweed (*Polypremum procumbens*) among many others.	2,041	2.8
Shrub / Brush land	Includes saw palmetto, gallberry, wax myrtle (*Morella cerifera),* coastal scrub, and other shrubs and brush. Generally, saw palmetto is the most prevalent plant cover intermixed with a wide variety of other woody scrub plant species as well as various types of short herbs and grasses.	1,828	2.5
Open Water (Artificial)	Open water that is altered or man-made. Includes farm ponds, impoundments/reservoirs, quarry ponds, sewage treatment ponds and industrial cooling ponds.	572	0.8
Low Intensity Urban	Includes low density residential areas, cemeteries and community recreational facilities at CBJTC.	324	0.4
Other (roads, utilities, etc.)	Includes transportation network (paved and unpaved roads), communications, and utilities.	299	0.4
Successional Hardwood Forest	Closed canopy forest dominated by fast growing hardwoods such as laurel oak, water oak, and/or sweetgum, often with remnant pines. This category represents invaded natural habitat due to fire suppression or old fields that succeeded to forest.	21	<0.1
	Total Altered Land Cover	**27,790**	**37.6**

Note: CBJTC GIS Boundary equals approximately 73,865.

Key: Global and State Ranks
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).

Source: FNAI 2010a, 2010b

Plant surveys have been conducted previously to identify rare plants occurring on CBJTC (Bio-tech 2009, Florida Museum of Natural History [FLMNH] 1996b), but no comprehensive plant surveys have been conducted. A total of 25 rare species have been documented on the installation, including the federally endangered and state threatened Chapman's rhododendron (*Rhododendron chapmanii*). Rare plant species known to occur on the installation are discussed further in **Section 2.3.4** and in the rare species survey by Bio-tech (2009).

To date, 44 invasive and/or exotic species have been documented at CBJTC. Invasive species management is discussed further in **Section 4.8**. A list of common vascular plant species observed during previous surveys is included in **Appendix C**.

A nonvascular plant survey including bryophytes and lichens was conducted from August 1998 through March 1999 by botanists from the University of Florida at CBJTC (Griffin 1999). A total of 172 species were gathered from six distinct habitats (scrub, sandhill, xeric hammock, baygall, bottomland forest[3], and ruderal[4]). Species were collected in the following proportions: 55 percent lichens (94 species), 25 percent mosses (43 species), and 20 percent liverworts (35 species). The ecological requirements of the three groups are sufficiently distinct that many species appear in only a few habitats. For instance, lichen diversity reaches its height in open sunny habitats with abundant shrub and tree growth (scrub and sandhill). Mosses and liverworts show their greatest diversity and abundance in habitats that maintain higher humidity and shade. Bottomland forests and baygalls are rich in these groups, with bottomland forests being the optimal habitat for bryophytes. Bottomland forests at CBJTC support basically twice as many species overall as scrub or baygall and 3 to 4 times as many as sandhill or xeric hammock. Xeric hammocks, while supporting representatives of all three groups, have limited diversity and abundance.

2.3.3 Fish and Wildlife

The following sections provide an overview of the fish and wildlife found within CBJTC. Fauna surveys and other studies have been conducted onsite for amphibians and reptiles (Bio-tech 2009, FLMNH 1996b, Hall et al. 1994a), birds (Bio-tech 2009, FLMNH 1996a, Hall et al. 1994b), fish (Nelson and Floyd 2011, CH2MHill 1999, Burgess and Matter 1994), aquatic macroinvertebrates (Nelson and Floyd 2011, CH2MHill 1999, Eco-Cognizant 1996a), Lepidoptera (Eco-Cognizant 1996b), and mammals (Bio-tech 2009, Finn 2008, Finn 2001, FLMNH 1996a). Additionally, surveys have been conducted previously to identify rare animals occurring on CBJTC (Bio-tech 2009, FLMNH 1996a). A summary of these findings is provided below. Fauna species lists are presented in **Appendix C**.

Amphibians and Reptiles

More than 20 amphibian species are known to occur within CBJTC. Amphibians include 17 frogs, 2 toads, and 4 salamanders (Bio-tech 2009, FLMNH 1996a, Hall et al. 1994a).

At total of 27 reptile species are known to occur within CBJTC, including the federally threatened Eastern indigo snake (*Drymarchon couperi*), the federally threatened American alligator (*Alligator mississippiensis*) due to similarity of appearance, the federal candidate and state threatened gopher tortoise (*Gopherus*

[3] Bottomland Forest = seasonally flooded forests located along waterways.

[4] Ruderal = Disturbed or altered lands

polyphemus). Reptiles include 12 snakes, 5 turtles, 5 lizards, 3 skinks, 1 tortoise, and 1 alligator (Bio-tech 2009, FLMNH 1996a, Hall et al. 1994a). A list of amphibians and reptiles found on CBJTC is provided in **Appendix C**.

Birds

More than 130 bird species are known to occur at CBJTC, including the federally endangered RCW, federally endangered wood stork (*Mycteria americana*), federally threatened Florida scrub-jay (*Aphelocoma coerulescens*) and 5 state listed species (see **Table 9**) (Bio-tech 2009, FLMNH 1996a, Moulton and Justice 1996, Hall et al. 1994b). A list of bird species found on CBJTC is included in **Appendix C**.

Fish

During 1993-1995, fish surveys were conducted at 20 sites within three drainage sub-regions on CBJTC: North Fork Black Creek, South Fork Black Creek, and sandhill lakes areas (Burgess and Matter 1994). Fish surveys were conducted again in January 1999 at 24 collection sites (CH2MHill 1999). Most recently during a baseline survey for the Black Creek crayfish (see below), Nelson and Floyd (2011) documented additional fish species. More than 35 fish species from 14 families have been observed during the surveys at CBJTC. No unusual or rare species of fish were collected. The most abundant species were the mosquitofish (*Gambusia holbrooki*), sailfin shiner (*Pteronotropis hypselopterus*), and bluegill (*Lepomis macrochirus*).

All three major habitat types were sampled during these studies: man-made borrow pits, lakes, and headwater streams. Fish were collected at only two of the borrow pit sites and included five species. Twenty species were collected within the lake habitat, which offered the greatest relative fish abundance. Headwater streams hosted 22 species; however, abundances were low when compared to lake collections. Species diversity was similar within the three drainage sub-regions (CH2MHill 1999, Burgess and Matter 1994). See **Appendix C** for fish species list on CBJTC, showing locations identified on the site.

Aquatic Macroinvertebrates

In 1995, 112 sites in the following habitats were sampled for aquatic macroinvertebrates (Eco-Cognizant 1996a). The following aquatic habitats were surveyed: blackwater streams, clearwater streams, marshy stream headwaters, seeps, lakes, small pools, wet prairies, cypress dome swamps, ponds, and roadside ditches. At least 83 families and approximately 250 species of aquatic macroinvertebrates were observed, which included a freshwater sponge (Porifera); snails and clams (Mollusca); aquatic earthworms, oligochaetes, and leeches (Annelida); scuds, a fairy shrimp, crayfish, shrimp, isopods, and seed shrimp (Crustacea); water mites (Acariformes); and 12 orders of insects (Insecta). Blackwater streams, roadside ditches, clearwater titanium mine ponds, borrow pit ponds, wet prairies, and cypress domes had the highest species richness. Brownwater titanium mine ponds had the lowest diversity.

During a subsequent survey in the late 1990s, sampling stations supported a wide variety of macroinvertebrate taxa, ranging from 71 taxa at one station to 17 taxa at another (CH2MHill 1999). The Black Creek crayfish (*Procambarus pictus*), a state species of special concern, was widespread and abundant in blackwater streams of the Black Creek drainage system (CH2MHill 1999). The rare Say's spiketail dragonfly (*Cordulegaster sayii*) was infrequently found in blackwater streams, especially in the Bull Creek basin. Two other rare species, the southeastern spinyleg dragonfly (*Dromogomphus armatus*) and

tawny sanddragon (*Progomphus alachuensis*), were occasionally found in blackwater streams and lakes, respectively.

Most recently, Nelson and Floyd (2011) conducted a baseline survey for the Black Creek crayfish to obtain a better understanding of the distribution and relative abundance of this species at CBJTC and to identify new sites. Sampling was performed within the North and South Forks of Black Creek and their tributaries, Bull Creek, and Alligator Creek and its tributaries, with the exception of the Impact Area due to safety concerns. Black Creek crayfish were observed at over half of the 245 survey sites (52 percent), while Peninsula crayfish (*Procambarus paeninsulanus*) / Slough crayfish (*Procambarus fallax*) and White Tubercled crayfish (*Procambarus spiculifer*) were found at 15 percent at 2 percent of the sites, respectively. No crayfish were observed at 7 percent of the sites and 30 percent of the sites were dry. Generally, Black Creek crayfish were observed at sites with low turbidity and siltation, high dissolved oxygen and water flow, and clear watercolor. Black Creek crayfish occurrence in Alligator Creek and its tributaries on the south post of CBJTC documents a range extension for the species outside of the Black Creek Drainage, and into the Half Moon Lake Outlet drainage. See **Appendix C** for aquatic macroinvertebrate species documented on CBJTC.

Mammals

Approximately 45 mammal species have been observed at CBJTC (Bio-tech 2009, Finn 2008, Finn 2001, FLMNH 1996a). A number of legal game mammals are hunted at CBJTC, including large and small game (see **Section 4.6.4**).

Eleven bat species have the potential to occur within CBJTC, but resident populations are unlikely for two migratory species, Hoary bat (*Lasiurus cinereus*) and silver-haired bats (*Lasionycteris noctivagans*). Six of the nine species with the potential to reside on CBJTC were captured or found roosting during a 2001 survey (Finn 2001), while all nine species were acoustically documented during the 2008 survey (Finn 2008). A list of mammal species is provided in **Appendix C**.

Lepidoptera (Butterflies)

A lepidopteran survey at CBJTC was conducted in 1995 (Eco-Cognizant 1996b). A total of 81 species of butterflies were found during the survey, which included 38 skippers (Hesperiidae), 7 swallowtails (Papilionidae), 8 sulfurs and whites (Pieridae), 8 hairstreaks and blues (Lycaenidae), 1 metalmark (Riodinidae), and 19 brushfoots (Nymphalidae). Rare or uncommon Florida butterflies found at CBJTC were: cobweb little skipper (*Amblyscirtes aesculapias*), southern swamp skipper (*Poanes yehl*), Zabulon skipper (*Poanes zabulon*), dotted skipper (*Hesperia attalus*), Meske's skipper (*Hesperia meskei*), gemmed satyr (*Cyllopsis gemma*), brown broken dash (*Wallengrenia egeremet*), Cofaqui giant skipper (*Megathymus cofaqui*), and yucca giant skipper (*Megathymus yuccae*).

Butterfly diversity was greatest in late spring/early summer and fall. Similarly, butterfly abundance was greatest in March/April and August through December, with about three times as many individuals occurring during the fall than other seasons. Overall, phaon crescent (*Phyciodes phaon*) was the most abundant species. At least 120 species of plants are utilized for nectar and larval hosts at CBJTC. See **Appendix C** for butterfly species documented on CBJTC.

2.3.4 Threatened and Endangered Species

Federal status as a threatened or endangered species is derived from the ESA (16 USC §1531 *et seq*.) and is administered by USFWS. They maintain a current list of federally endangered and threatened species, candidate species, and species of concern. Candidate species and species of concern designated by USFWS receive no statutory protection under the ESA. The Florida Endangered and Threatened Species Act (Chapter 379.2291, F.S.) further conserves and protects federal and state listed fish and wildlife. FFWCC maintains the state list of animals designated as federally endangered or threatened, state threatened, or state species of special concern in accordance with rules 68A-27.003 and 68A-27.005 FAC, respectively. Florida Department of Agriculture and Consumer Services (FDACS) Division of Plant Industry administers and maintains a list of endangered, threatened, and commercially exploited plants in accordance with chapter 5B-40, FAC. FNAI maintains a list of species and natural communities documented by location. However, it should be noted that the FNAI database is not a comprehensive list as it is dependent on reported occurrences.

In accordance with AR 200-1 and DoDI 4715.03, FLARNG has conducted surveys for federally threatened and endangered species, federal species of concern and candidate species, and state listed species at CBJTC (e.g., FLMNH 1996a, FLMNH 1996b, Bio-tech 2009). Currently, FFWCC lists 46 federally endangered animal species, 20 federally threatened animal species, 1 federal experimental population, 21 state-designated threatened animal species, and 43 state species of special concern (Gruver and Montero 2018). Of these 131 listed animal species in Florida, 19 are known to occur at CBJTC (see **Table 9**). The bald eagle (*Haliaeetus leucocephalus*) was removed from the federal ESA list in June 2007 and is not state listed. However, protections under the Bald and Golden Eagle Act are still in effect. Bald eagle nests have been found in several places on the installation. No federally designated critical habitat occurs within CBJTC. FDACS currently lists 440 endangered plants – 117 threatened plants and 8 commercially exploited planted species (Weaver and Anderson 2010). Of these 565 listed plant species in Florida, 25 are known to occur at CBJTC (see **Table 10**).

For wildlife species with a calculated climate change vulnerability index (CCVI), the status is included in **Table 9** (see **Section 3.4** for more details). A CCVI is not available for any of the plants.

Field guide excerpts from Hipes et al. (2000) and Chafin (2000) for listed species known to occur on-site and species specific management plans developed for CBJTC, when available, are included in **Appendix E**. **Tables 9** and **10** provide information regarding CBJTC's management priority for each of the rare animal and plant species, respectively, known to occur or with the potential to occur at CBJTC. For additional information, refer also to Bio-tech's (2009) *Threatened and Endangered Species Survey Report for Camp Blanding Joint Training Center*. Management priorities and recommendations are discussed in **Section 4.7**.

The RCW is the only federally listed species at CBJTC with a BO for the DoD. USFWS issued a BO for the RCW on Army Installations in 2007 (Costa 2007). A revision to this BO was made in 2008 (Hankla 2008) for CBJTC based on FLARNG's ESMC Update for Incidental Take (Robinson 2008). For a copy of the above listed documents and other information related to the RCW at CBJTC, refer to **Appendix D**.

Table 9. Federal and State Listed Animal Species Documented on CBJTC or with the Potential to Occur in Clay County

Scientific Name	Common Name	Known to Occur at CBJTC	Federal / State Listing Status	CCVI	CBJTC Management Priority	Habitat				
						Pinelands	Flatwoods	Sandhill	Scrub	Wetlands
Birds										
Aphelocoma coerulescens	Florida scrub-jay	✓	FT	-	High				✓	
Aramus guarauna	Limpkin		ST	PS	Low					✓
Egretta caerulea	Little blue heron	✓	ST	-	Low					✓
Egretta tricolor	Tricolored heron	✓	ST	-	Low					✓
Falco sparverius paulus	Southeast American kestrel	✓	ST	-	Medium	✓		✓		
Grus canadensis pratensis	Florida sandhill crane	✓	ST	-	Low					✓
Mycteria americana	Wood stork	✓	FT	-	Low					✓
Picoides borealis	Red-cockaded woodpecker	✓	FE	-	High	✓	✓	✓		
Crustaceans										
Procambarus pictus	Black Creek crayfish	✓	ST	-	Low					✓
Mammals										
Perimyotis subflavus	Tricolored bat		ST			Variety				
Puma concolor coryi	Florida panther		FE	PS	N/A	Variety				
Reptiles										
Alligator mississippiensis	American alligator	✓	FT (S/A)	-	N/A					✓
Crotalus adamanteus	Eastern diamondback rattlesnake					Variety				

Table 9. Federal and State Listed Animal Species Documented on CBJTC or with the Potential to Occur in Clay County

Scientific Name	Common Name	Known to Occur at CBJTC	Federal / State Listing Status	CCVI	CBJTC Management Priority	Habitat				
						Pinelands	Flatwoods	Sandhill	Scrub	Wetlands
Drymarchon couperi	Eastern indigo snake	✓	FT	-	High	Variety				
Gopherus polyphemus	Gopher tortoise	✓	FC / ST	-	High	✓	✓	✓	✓	

STATUS: FE – Federally Endangered; FT – Federally Threatened; FT (S/A) = Federally Threatened due to Similarity of Appearance; FC – Federal Candidate; ST = State Threatened

CCVI: HV = Highly Vulnerable = Abundance and/or range extent within geographical area assessed is likely to decrease significantly by 2050; PS = Not vulnerable / Presumed Stable = Available evidence does not suggest that abundance and/or range extent within the geographic area assessed will change by 2050; however, actual range boundaries may change.

* FFWCC is in the process of updating their species listings. The SSC category is being maintained until all the species have been reviewed, and those species are either designated as a state threatened species or given a management plan and removed from the list.

Source:
USFWS 2019, Gruver and Montero 2018, DuBois et al. 2001, Weaver and Anderson 2010, Bio-tech 2009, FLMNH 1996a, Hall 1994a, Christman and Means 1992, Godley 1992, Layne 1992, Kantola 1992, Maehr 1992, and Franz 1992

Table 10. Federal and State Listed Plant Species Documented on CBJTC or Known to Occur in Clay County

Scientific Name	Common Name	Observed at CBJTC	Federal / State Listing Status	CBJTC Management Priority	Habitat						
					Mixed Forests	Flatwoods	Pinelands	Sandhill	Scrub	Floodplains	Wetlands
Agrimonia incisa	Harvest-lice		SE	Low	✓		✓	✓			
Arnoglossum diversifolium	Indian plantain		ST	Low						✓	✓

Table 10. Federal and State Listed Plant Species Documented on CBJTC or Known to Occur in Clay County											
Scientific Name	Common Name	Observed at CBJTC	Federal / State Listing Status	CBJTC Management Priority	Habitat						
					Mixed Forests	Flatwoods	Pinelands	Sandhill	Scrub	Floodplains	Wetlands
Andropogon arctatus	Pinewoods bluestem		ST	Low		✓					
Asclepias curtissii	Curtiss' milkweed	✓	SE	Medium					✓		
Asclepias viridula	Green milkweed		ST	Low		✓	✓				
Athyrium filix-femina	Southern lady fern	✓	ST	Low						✓	
Balduina atropurpurea	Purple balduina		SE	Low			✓				✓
Baptisia calycosa	Canby's wild-indigo		SE	Low		✓		✓			
Brickellia cordifolia	Flyer's Brickell-bush		SE	Low	✓						
Calopogon multiflorus	Many-flowered grass pink		SE	Low			✓				
Carex chapmanii	Baltzell's sedge		ST	Low	✓						
Centrosema arenicola	Sand butterfly-pea		SE	Low	✓						
Cleistes bifaria	Spreading pogonia	✓	ST	Low							
Cleistes divaricata	Spreading pogonia		ST	Low			✓				✓
Ctenium floridanum	Florida toothache grass	✓	SE	Low			✓	✓			
Drosera intermedia	Water sundew	✓	ST	Low							✓
Epidendrum conopseum	Green-fly orchid	✓	CE	Low							✓
Garberia heterophylla	Garberia		ST	Low					✓		
Hartwrightia floridana	Florida hartwright	✓	ST	Low		✓					
Helianthus carnosus	Flatwoods sunflower		SE	Low		✓					
Lilium catesbaei	Catesby lily	✓	ST	Low		✓					

Table 10. Federal and State Listed Plant Species Documented on CBJTC or Known to Occur in Clay County											
Scientific Name	Common Name	Observed at CBJTC	Federal / State Listing Status	CBJTC Management Priority	Habitat						
					Mixed Forests	Flatwoods	Pinelands	Sandhill	Scrub	Floodplains	Wetlands
Linum westii	West's flax		SE	Low		✓					✓
Litsea aestivalis	Pond-spice		SE	Low							✓
Lobelia cardinalis	Cardinal flower		ST	Low						✓	
Marshallia ramosa	Southern Barbara's buttons		SE	Low	✓						
Matelea floridanum	Florida spiny-pod	✓	SE	Medium				✓			
Matelea pubifloria	Florida spiny-pod	✓	SE	Medium							
Osmunda cinnamomea	Cinnamon fern	✓	CE	Low							✓
Osmunda regalis	Royal fern	✓	CE	Low							✓
Pinckneya bracteata	Hairy fever-tree	✓	ST	Low							✓
Pinguicula caerulea	Blue butterwort	✓	ST	Low							✓
Pinguicula lutea	Yellow butterwort	✓	ST	Low							✓
Platanthera blephariglottis	White-fringed orchid		ST	Low							✓
Platanthera ciliaris	Yellow fringed orchid	✓	ST	Low		✓					
Platanthera cristata	Golden fringed orchid	✓	ST	Low							✓
Platanthera flava	Gypsy-spikes		ST	Low						✓	✓
Platanthera nivea	Snowy orchid		ST	Low						✓	✓
Pogonia ophioglossoides	Rose pogonia	✓	ST	Low		✓					
Pteroglossapsis ecristata	Giant orchid	✓	ST	Low		✓					
Pycnanthemum floridanum	Florida mountain-mint		ST	Low			✓	✓			

Table 10. Federal and State Listed Plant Species Documented on CBJTC or Known to Occur in Clay County

Scientific Name	Common Name	Observed at CBJTC	Federal / State Listing Status	CBJTC Management Priority	Habitat						
					Mixed Forests	Flatwoods	Pinelands	Sandhill	Scrub	Floodplains	Wetlands
Rhapidophyllum hystrix	Needle palm	✓	CE	Low						✓	
Rhododendron canescens	Pink azalea	✓	CE	Low	✓						
Rhododendron chapmanii	Chapman's rhododendron	✓	FE / SE	High		✓					
Rudbeckia nitida	St. John's black-eyed susan	✓	SE	Medium		✓					
Ruellia noctiflora	Night-flowering wild petunia		SE	Low		✓					
Salix floridana	Florida willow		SE	Low						✓	✓
Sarracenia minor	Hooded pitcher plant	✓	ST	Medium		✓					
Sideroxylon alachuense	Clark's buckthorn		SE	Low	✓						
Sideroxylon lycioides	Gopherwood buckthorn		SE	Low						✓	
Sphenostigma coelestinum	Bartram's ixia	✓	SE	Medium		✓					
Spiranthes tuberosa	Little ladies'-tresses	✓	ST	Medium					✓		
Stylisma abdita	Hidden stylisma		SE	Low			✓		✓		
Zephyranthes atamasco	Atamasco-lily	✓	ST	Medium						✓	
Zephyranthes treatiae	Treat's zephyr-lily		ST	Low		✓					

Key: FE – Federally Endangered; SE – State Endangered; FT - Federally Threatened; ST = State Threatened; CE – Commercially Exploited

Source: FNAI 2020, Gruver and Montero 2018, Weaver and Anderson 2010, Bio-tech 2009, FLMNH 1996a

3.0 MISSION SUSTAINABILITY

3.1 Integrating Natural Resources Management and Military Mission

An effective INRMP integrates aspects of natural resources management into the military mission. As such, it becomes the primary tool for ecosystem management at CBJTC while ensuring the successful, efficient accomplishment of the military mission. A multiple-use ecosystem management approach will be implemented to accommodate mission-oriented activities and provide for good stewardship, thereby maintaining and improving the quality, aesthetic values, and ecological relationships of the environment.

The purpose of the CBJTC is to ***maintain sustainable natural resources as a critical training asset*** upon which to accomplish the FLARNG mission. To accomplish this goal, natural resource managers need to:

- Ensure ***no net loss*** in capability to support existing and projected military training.
- Maintain ***quality training lands*** through monitoring, minimizing damage, mitigation, and rehabilitation.

Specific military missions and training requirements are fluid and change from time to time with realignments, transformations, and changes in equipment and tactics. This requires the establishment of basic underlying natural resource management principles and practices that have broad application and can be adapted for multiple situations. Implementation of this INRMP will successfully promote adaptive stewardship practices that protect and enhance natural resources for multiple use, sustainable yield, and biological integrity, while supporting the military mission.

As part of implementing this approach, there are two interrelated programs that are used: ITAM and Environmental Programs. ITAM and Environmental integrate the military mission and natural resources in different ways and together ensure sustainable use of training lands while providing strong consideration for environmental and public concerns.

3.1.1 Operations Planning & Review

Projects, activities, new development, and mission changes are typically reviewed by multiple entities within FLARNG including CBJTC-DPW and CBJTC-ED. New construction projects and work orders are reviewed every other Monday by CFMO, FMO-ENV, and CBJTC-DPW. Larger scale projects are also reviewed by the Environmental Quality Control Committee (EQCC) (see **Section 1.3.1**). If there is potential for environmental impacts, the NEPA process is started, as described in **Section 3.3.** If there are additional environmental compliance requirements, CBJTC-ED or FMO-ENV facilitates any required consultation or permit applications, as described in **Section 3.2**.

3.1.2 Natural Resources Management Actions

There are two primary areas of potential impacts to natural resources from the military mission on CBJTC: wildland fire and listed species. In addition, there are significant requirements for management of vegetation and water resources to support the military mission, although the military mission does not generally impact them directly. The military mission can result in wildfires; therefore, managing wildland fire risk and fuel loads is an important part of the natural resources management program on CBJTC. There are also a number of listed species present on CBJTC. While some of them benefit from the effects of the military mission, there are still regulatory requirements and a general contribution to the recovery of listed species

to meet as required by the ESA for all federal agencies. In addition to the impacts from the mission on natural resources, the active management of vegetation (see **Section 3.1.4** below) is a critical and necessary component of natural resources management on CBJTC. Furthermore, despite the fact that water resources are in good to excellent condition on CBJTC, they could be put at risk without the current natural resources management program.

The ultimate goal of this INRMP, as well as its subsequent updates or revisions, is to ensure long-term capability for FLARNG to meet their missions and training requirements, while managing for sustainable natural resources at CBJTC. The development and implementation of an active natural resources management program will accommodate the military mission, while emphasizing integrated, adaptive management that focuses on maintaining ecosystem function and stability.

All the landscapes at CBJTC are important in supporting training activities. Realistic training is dependent upon an intact natural setting. Degradation of natural resources can result in unintended impacts to the military mission, impaired readiness, and funds spent on natural resources crisis management and interventions rather than the military mission. FLARNG needs the land and its natural resources to function together in a healthy ecosystem to support the military mission. Management activities in this INRMP are designed to support the desired habitats and ecosystem functions.

3.1.3 Environmental Awareness

The primary means of environmental awareness for CBJTC is the ITAM program (see **Section 1.5.7**). For military users of CBJTC, a core component of the ITAM program is Environmental Awareness aimed at minimizing environmental impacts. The ITAM program provides day-to-day environmental awareness for CBJTC through solider cards and handbooks developed with input from CBJTC-ED. Environmental Compliance Officer (ECO) Training provides another opportunity to discuss natural resources and other environmental resources on CBJTC. CBJTC-ED also maintains an entrance room on the way to Range Control with brochures, animal displays, and other educational materials that provide an opportunity for soldiers and other site users to familiarize themselves with natural resources at CBJTC.

3.2 Consultation Requirements

FLARNG has multiple natural resources consultation requirements in addition to the INRMP development and review requirements identified in the SAIA (see **Section 1.0**). Federally listed threatened and endangered species management requires ESA Section 7 consultation with USFWS. State listed rare species management and game species management requires consultation with FFWCC. Actions that fall under the jurisdiction of Section 404 or 401 of the CWA necessitate permitting from USACE, FDEP and St John's River WMD. In addition to natural resources consultation requirements, there are National Historic Preservation Act (NHPA) and tribal consultation requirements, which are presented in full in the ICRMP for CBJTC (**Appendix P**).

3.3 NEPA

CBJTC follows the process established in the 2011 *ARNG NEPA Handbook, Guidance on Preparing Environmental Documentation for Army National Guard Actions in Compliance with the National Environmental Policy Act of 1969* (ARNG 2011). The initial step in compliance with NEPA for any activity that might impact the environment by FLARNG is to complete a *REC and Check Form*. The form is prepared to aid in the development of the assessment; it provides information on the proposed action and its alternatives, purpose, and potential environmental effects. This allows the proponent to identify potential environmental impacts early and facilitates making a determination about whether an EA or Environmental Impact Statement (EIS) might be required for a specific action. Some sections are prepared by the proponent and other sections are prepared by CBJTC-ED or FMO-ENV. For activities where a REC and Check is sufficient, CBJTC-ED completes and/or reviews the REC and Check. For activities where additional NEPA analysis is required, FMO-ENV prepares and manages the analysis.

If the action is not covered by a categorical exclusion, then an EA is prepared to determine if there are potential significant impacts. If potential significant impacts are identified while completing the REC and Check or during the EA, then an EIS is prepared. The majority of natural resources management actions are covered by categorical exclusions.

3.4 Encroachment Management

CBJTC has been partnering with ARNG G-9 and the State of Florida through the Florida Forever program since 2003 to establish a three-mile compatible use buffer around the installation. This effort is known as the Camp Blanding Forever Initiative (CBFI) and helps prevent development of lands adjacent to CBJTC and encroachment from becoming an impediment to training and natural resource management. By securing a buffer, CBJTC can continue to provide critically important high quality military training and operations to ensure combat readiness. Efforts to support CBJTC through the combination of CBFI and Florida Forever also contribute to a regional conservation corridor and regional coordination among all participating entities for land management success. At this time there are no plans to acquire additional acreage that increases the size of the training center; however, these efforts have added state land and conservation easements around CBJTC. See the Florida Forever website at http://www.dep.state.fl.us/lands/fl_forever.htm for more information about the state agencies involved and the planning and prioritization efforts that support this initiative.

3.5 Beneficial Partnerships and Collaborative Resource Planning

FLARNG is working with FDEP and St. John's River WMD to utilize some of the lands acquired as part of the CBFI program for conducting off-site wetland mitigation. Once the conditions and mitigation credits are established, FLARNG will be able to utilize this land for wetland mitigation requirements associated with CBJTC construction projects.

In addition to the CBFI and Florida Forever programs, there are other regional planning efforts that support CBJTC and resource management in the area. The State of Florida in §163.3175, F.S. (2011) recognized that certain military installations have a potential for experiencing compatibility and coordination issues. For

CBJTC, Clay, Bradford, and Putnam Counties were identified as affected local governments and each county has included CBJTC into their Comprehensive Plan.

Furthermore, the State of Florida finds that incompatible development of land close to military installations can adversely affect the ability of an installation to carry out its mission, public safety, and economic viability of a community if military operations and missions must relocate due to incompatible urban encroachment. In particular, the *2025 Clay County Comprehensive Plan* was amended pursuant to Ordinance No. 2009-65 to include objectives and policies to protect the current long-term viability of CBJTC from future land development (Clay County 2009), and the *2016 Bradford County Comprehensive Plan* has incorporated a CBJTC military zone on their 2016 future land use plan map (Bradford County Board of County Commissioners 2006). Currently, CBJTC maintains non-voting representation on the Zoning Board for Clay County to ensure that any impacts to CBJTC are articulated to the Zoning Board.

As discussed in **Section 2.2**, approximately 56,200 acres of CBJTC is also known as Camp Blanding WMA; through MOA, hunting, fishing, and recreation are allowed during certain times of the year. A MOA also exists between FFWCC and FDMA for public use of Lowry Lake and Magnolia Lake for fishing. FFWCC manages the WMA. FFWCC retains all funds associated with hunting activities and in turn provides FLARNG with assistance with wildland fires, rare species management, fish and wildlife management, and other activities. FFWCC and FLARNG have had this collaborative arrangement since 1956. A copy of the MOAs is provided in **Appendix I**. Additional information pertaining to fish and wildlife management at CBJTC is included in **Section 4.6**.

The Florida Armory Board has recently entered into an agreement with the USFWS, and the FFWCC, the CBJTC Candidate Conservation Agreement with Assurances for Multiple At-Risk Species in North Florida (CCAA). The purpose of the CCAA is to undertake actions that will remove or reduce threats to candidate and other at-risk species. The agreement includes portions of CBJTC that support natural habitat for candidate and at-risk species' and are not at risk of future development or intensive military operations. Conservation objectives and multiple conservation actions are presented in the Agreement to accomplish this goal (see **Appendix I**). Annual CCAA reports will be added to **Appendix S**, the 2018-2019 report is currently included.

CBJTC has both formal and informal agreements in place for wildland fire suppression and management activities, as described in the IWFMP for CBJTC (see **Appendix G**). Agreements include:

- ***North Central Florida Prescribed Fire Working Group Memorandum of Understanding (MOU)*** – this formal agreement entails the sharing of personnel and resources between the following agencies and municipalities: Alachua County, CBJTC, the City of Gainesville, Florida Forest Service (FFS), Florida Park Service, FFWCC, St. John's River WMD, Suwannee River WMD, US Forest Service (USFS), The Nature Conservancy, University of Florida Board of Trustees, and USFWS. A copy of this agreement is found as an appendix to the IWFMP (see **Appendix G**).
- ***Informal Working Partnership with FFWCC*** – FFWCC staff located at CBJTC, when called upon, can assist with prescribed fire and wildfire events. FFWCC staff are located on-site due to the MOA for Camp Blanding WMA discussed above.

- ***Informal Partnership with the FFS Jacksonville District*** – this working mutual aid agreement allows for CBJTC to call on FFS resources for aid and vice versa if there is an immediate wildland fire concern.

At this time, CBJTC does not have an agreement with the National Wildfire Coordinating Group (NWCG) to supply personnel or equipment to federal fires. However, should that opportunity become available in the future, personnel and equipment would be sent off-Post at the Installation Wildland Fire Manager's discretion and related to the level of fire danger. Additional information pertaining to wildland fire management at CBJTC is included in **Section 4.5**.

The 650-acre Brooklyn Lake, located south of CBJTC in the City of Keystone Heights, has experienced a large decline in water levels (see **Section 2.2.6**). CBJTC, along with numerous other agencies and state and local representatives, has been actively involved with the City of Keystone Heights since 1997 to help find a way to restore lake levels.

3.6 Public Access and Outreach

CBJTC offers a variety of recreational and public access opportunities throughout the Post. However, the Impact Area is restricted due to safety concerns associated with UXO. No recreational activities or public access are authorized within the Impact Area.

As discussed above, the approximately 56,200 acres of CBJTC that is a WMA is open to hunting, fishing, wildlife viewing, and hiking during certain times of the year. Dogs are prohibited for purposes other than hunting. Public access is allowed during periods open to hunting. Fishing is allowed on Lowry Lake and Magnolia Lake per the Camp Blanding FMA MOA between FDMA and FFWCC. Scouting is prohibited prior to hunting seasons.

Camp Blanding Road and Gun Club, in conjunction with Range Control, manages hunting in areas not covered under FFWCC WMA. Hunting areas managed by this club represent areas of CBJTC where general public access is restricted. Hunting in these areas is open to National Guard members, retired military, and state employees. Hunting access is much more restrictive within these areas (i.e., availability of these areas can be canceled with short notice if they are needed for training). The club retains the funds generated from hunting, but uses it for public outreach activities that benefit the installation (e.g., Wounded Warrior, Beast Feast, etc.). More details on the hunting and fishing activities are provided in **Section 4.6**.

A portion of the Florida National Scenic Trail runs through the southern portion of CBJTC and is governed by a MOA with the Florida Trail Association (FTA). The trail can be rerouted around the installation when the area is needed for training. FLARNG helps maintain the trail on CBJTC in conjunction with the FTA. A kiosk is located at the trail entrances within CBJTC to provide information on trail closures and any revised routes. Hiking and biking are allowed when the trail is open.

CBJTC-ED also regularly conducts local public outreach activities with Audubon, Boy Scouts, local schools, etc. Public outreach activities vary annually and typically center around natural resources awareness activities.

3.7 State Wildlife Action Plan

During the INRMP development process, FLARNG consulted the draft *Florida's Wildlife Legacy Initiative: Florida's State Wildlife Action Plan* (FFWCC 2018), as well as *Florida's Wildlife Legacy Initiative: Comprehensive Wildlife Conservation Strategy* (FFWCC 2019) to ensure INRMP goals, objectives, and strategies are consistent with Florida's overall statewide and habitat-specific plans. Florida's SWAP is a strategic vision of the integrated conservation efforts needed to sustain the broad array of wildlife in the state. The purpose of Florida's SWAP is to serve as a starting point for building a common framework for Florida's numerous wildlife conservation partners. Florida's SWAP is available at http://myfwc.com/conservation/special-initiatives/fwli/action-plan/download/.

The goals of Florida's SWAP are:

- Use Florida's Wildlife Legacy Initiative framework to coordinate natural resource conservation by (1) implementing and revising the 2005 State Wildlife Action Plan; (2) developing and maintaining partnerships; and (3) managing the State Wildlife Grants Program.
- Facilitate habitat conservation efforts on the following high-priority habitat categories to improve their health and resiliency and to achieve their long-term ecological sustainability statewide: sandhill, scrub, softwater stream, spring and spring run, coral reef, and seagrass.
- Obtain information on the life history, status, trend, population dynamics and management, and needs for Species of Greatest Conservation Need (SGCN).
- Enhance monitoring of priority species and habitats by developing a tracking system for species and habitats identified in the SWAP.
- Develop a GIS application that identifies the most important cooperative conservation focal areas for Florida's terrestrial, freshwater, and marine ecosystems. Merge the various existing GIS planning applications in order to generate an integrated land and water cover map for Florida. Make it available on Arc Internet Mapping Service.

Key statewide threats include alterations of the physical environment, degradation of water resources, incompatible fire management, and introduced plants and animals. Key conservation challenges include public awareness, information management, data gaps, and partnerships. While all INRMP goals, objectives, and strategies were found to be consistent with Florida's SWAP, not all of them contribute specifically to one of the SWAP's goals or conservation actions. The SWAP identifies very high, high, medium and low priority conservation actions and habitat types for Florida.

Very high priority habitats present on CBJTC include freshwater marsh-wet prairie, natural pinelands, sandhills, and scrub. High priority habitats present on CBJTC include bay swamp, cypress swamp, grassland/improved pasture, hardwood hammock, and hardwood swamp/mixed wetland forest. The Lower St John's River Basin is one of the highest ranking enhancement basins for watersheds within Florida's SWAP.

The SGCN list identifies the broad range of Florida's animal species that are imperiled or at risk of becoming imperiled in the future. After assessing all native freshwater, marine, and terrestrial wildlife species known

to occur within Florida, 1,036 SGCN were identified, including 21 amphibians, 52 mammals, 56 reptiles, 161 birds, 78 fish, and 668 invertebrates. SGCNs include federal and state listed species as well as species that met the SWAP's definition of rare (10,000 or fewer individuals) or biologically vulnerable (vulnerable to extinction). SGCN also include keystone species that play a critical role in maintaining the structure of an ecological community, and taxa of concern that have at least a moderate risk of extinction in the future. Numerous SCGN occur within CBJTC that benefit from the natural resources program. Fish and wildlife management and rare species management are discussed in **Sections 4.6** and **4.7**, respectively. For a complete list of Florida SGCN, refer to the SWAP. Animal species known to occur within CBJTC are listed in **Appendix C**.

3.8 INRMP Implementation Analysis

The primary measure of INRMP effectiveness is whether it helps prevent net loss in the capability of military lands to support the military mission. FLARNG is preserving CBJTC's capability to support training through its natural resources management practices outlined in the 2014 INRMP and in this update. Long-term management effectiveness is also evaluated through periodic inventories of species populations, habitat quantity and quality, and habitat values through the recurring Planning Level Surveys (PLS). Trends can be used to indicate the degree of success. FLARNG will evaluate these recurring data as they become available.

A practical evaluation of INRMP implementation includes reviewing whether planned projects have been accomplished. An analysis of the FY 2013-2019 projects and their implementation status is included in **Table 11**.

Overall, CBJTC has benefited from the INRMP as a management tool. The program and goals in the 2014 INRMP are being addressed through implementation of management actions. Most of the specific management actions have been implemented through projects, while some have been in-house activities. A large number of the projects are recurring actions that are continued in this INRMP. See **Section 4.0** for topic-specific goals and objectives and **Section 5.0** for a complete summary of goals, objectives, and associated projects and activities.

Table 11. Implementation Status of the 2007 INRMP				
Program / Funding Category	**Funding Source***	**Project Description**	**Implementation Status**	**Included in Updated INRMP**
CBJTC Natural Resources Personnel	Env	Training Site Environmental Manager	Ongoing	Modified
	CBMTF	Forest Area Supervisor	Ongoing	Modified
	Env	Endangered Species Biologist	Ongoing	Modified
	CBMTF	Forester	Ongoing	Modified
	Env	Natural Resources Manager	Remove	Modified
	Env	Forest/Wildlife Tech	Annual	Modified
	Env	Administrative Assistant	Ongoing	Modified
	Env	Environmental Specialist 1	Ongoing	Modified
	CBMTF	4 Forest Rangers	Ongoing	Modified
	ITAM	RTLA Biologist	Remove	Modified
	Env	Professional Training & Education	Ongoing	Modified
	Env	GIS Systems Analyst	Ongoing	Modified
	FFWCC	Manage hunting and fishing program	Ongoing	Yes
	ITAM	RTLA Crews Salaries		No
	ITAM	LRAM Coordinator Salary		No
	ITAM	GIS Technician Salary		No
RTLA Program	ITAM	RTLA Database Management		No
	ITAM	Data Collection	Annual	Yes
	ITAM	RTLA Plot Management		No
	ITAM	Non-GIS Equipment		No

Table 11. Implementation Status of the 2007 INRMP				
Program / Funding Category	**Funding Source***	**Project Description**	**Implementation Status**	**Included in Updated INRMP**
RTLA continued	ITAM	GPS Equipment		No
	ITAM	Production/Imagery		No
	ITAM	Digital Video Camera		No
	None	Impact Area Assessment		No
GIS Program	ITAM	GIS External Support		No
	ITAM	GIS Equipment		No
	ITAM	Imagery Acquisition		No
	ITAM	Data Collection		No
	ITAM	GPS Equipment		No
	ITAM	GIS Operator		No
TRI Program	ITAM	TRI Management		No
	ITAM	TRI ADP (Communication) Equipment		No
	ITAM	TRI Training		No
	ITAM	TRI Equipment		No
	ITAM	TRI Imagery Equipment		No
LRAM Program	ITAM	Fencing		No
	ITAM	LRAM Project Design		No
	ITAM	Soil Rehabilitation		Yes
	ITAM	Non-GIS Equipment		No

Table 11. Implementation Status of the 2007 INRMP				
Program / Funding Category	**Funding Source***	**Project Description**	**Implementation Status**	**Included in Updated INRMP**
LRAM continued	ITAM	LRAM Equipment		No
	ITAM	Hydro Seeder		No
	ITAM	LRAM Equipment - Seeder/Drill		No
	ITAM	LRAM Equipment - Skid Unit		No
	ITAM	Equipment Maintenance/Repair		No
	ITAM	Helicopter Erosion Control		No
Environmental Awareness Program	ITAM	EA Video/Automation		No
	ITAM	EA Signs		Yes
	Env	Taxidermy	Partially Complete	No
	Env	EA Training	Ongoing	Yes
	ITAM	EA Printing		No
Ecosystem Management	Env	Endangered Species Management Plan Implementation	Annual	Yes
	CBMTF/Env	Implement INRMP	Ongoing	Yes
	CBMTF/Env	Prescribe burning and thinning for endangered species habitat	Ongoing	Yes
	Env/FFWCC	Application for Prescribed Fire (Helicopter)	Annual	Yes
	Env	Threatened, Endangered Species monitoring	Annual	Yes
	Env	Update INRMP (existing staff)	Annual	Yes
	Env	RCW ecological research	Annual	Yes
	Env	Control/eradicate alien and exotic plant species	Partially Complete	Yes

Table 11. Implementation Status of the 2007 INRMP				
Program / Funding Category	**Funding Source***	**Project Description**	**Implementation Status**	**Included in Updated INRMP**
Ecosystem Management continued	Env	Conduct Planning Level Surveys for fauna	As Needed	Yes
	Env	Conduct Planning Level Surveys for flora	Partially Complete	Yes
	Env/DPW	Implement IPMP	Annual	Yes
	Env/DPW	Conduct wetlands delineation	As Needed	Yes
	Env	GIS hardware and software	As Needed	No
	Env	Aquatic communities Planning Level Survey	Partially Complete	Yes
	All	Develop GIS layers for Natural and Cultural Resources, using existing staff	Ongoing	Yes
	CBMTF/Env	Prescribed Fire Materials	Annual	Yes
	CBMTF/Env	Mining dune restoration	Partially Complete	Yes
	All	Brooklyn Lake Assistance	As Needed	Yes
Forestry Program	CBMTF/Env	Wildland fire training	As Needed	Yes
	CBMTF	Fire break maintenance	Ongoing	Yes
	CBMTF/Env	Stand site prep and planting	Annual	Yes
	CBMTF	Stand Fertilization	As Needed	Yes
*Key: CBMTF = Camp Blanding Management Trust Fund, Env = Environmental Funds, DPW = Department of Public Works				

4.0 NATURAL RESOURCES PROGRAM MANAGEMENT

The guiding philosophy of this INRMP is to take an ecosystem approach to managing the natural resources present on CBJTC (see **Section 1.5.3**). Ecosystem management provides a framework to link the military mission to local, regional, and global ecological integrity. Sustaining ecosystem integrity is the best way to protect and enhance biodiversity, ensure sustainable use, and minimize the effort and cost of management.

Ecosystem management is based on clearly stated goals and objectives, and associated activities and projects. This INRMP identifies goals and objectives, and presents the means to accomplish them as well as the methodologies to monitor results. Activities generally refer to in-house, no-cost actions undertaken by FLARNG and CBJTC personnel. Projects generally refer to actions that are performed by others, usually under contract or other agreement. In addition, projects can be performed using non-DoD funds or by volunteers. See **Section 5.3** for more details about funding.

This chapter summarizes each technical area of natural resources management. In a given section, relevant management strategies, practices, guidelines, best management practices (BMPs), and priorities will be presented, as applicable to the technical topic. Goals and objectives are presented below by section. Activities (i.e., recurring, in-house tasks) and projects (i.e., discrete and/or contracted tasks) associated with those goals and objectives are presented in **Tables 15 and 16** respectively in **Section 5.0**. Laws and regulations are not summarized in each sub-section, although primary legal drivers are identified. A summary of relevant laws, regulations, EOs, and policies is provided in **Appendix J**.

The following management sections are not included in this INRMP because they do not apply at CBJTC:

- Coastal/Marine Management – No coastal or marine habitat occurs within CBJTC.
- Agricultural Outleasing – CBJTC does not currently have cropland, hay, or grazing leases.

4.1 Natural Resources Program Development

GOAL PM: Manage natural resources in a manner that is compatible with and supports the military mission while complying with applicable federal and state laws and DA regulations and policies.

- OBJECTIVE PM1: Initiate and/or continue programs and projects that enhance the training land and training opportunities and result in no net loss of training land availability.
- OBJECTIVE PM2: Use adaptive, ecosystem management as the primary natural resources management paradigm.
- OBJECTIVE PM3: Continue internal environmental awareness activities to minimize impacts to natural resources from FLARNG and visiting personnel.
- OBJECTIVE PM4: Continue public outreach activities in coordination with other regional entities as appropriate.
- OBJECTIVE PM5: Continue cooperating with other agencies to provide outdoor recreation opportunities, without impacting military mission or ecological health.

- OBJECTIVE PM6: Continue to cooperate with other agencies and local landowners on regional land and natural resources management efforts.
- OBJECTIVE PM7: Maintain and improve GIS data and access to that GIS data.

Programmatic management includes the overall program elements to implement a comprehensive natural resources management program. Elements included in this section generally include areas that intersect with all or most components of the program, such as environmental awareness, public outreach, GIS data management, natural resources law enforcement, INRMP annual reviews, adaptive management, and other objectives relating to implementing a natural resources management program.

Primary Regulatory Drivers

- SAIA
- DoDI 4715.03
- AR 200-1

4.1.1 Environmental Awareness and Public Outreach

There are several organizations within FLARNG that undertake environmental awareness and public outreach activities, including some specific to environmental and natural resources management. The ITAM program includes an Environmental Awareness component that has two target audiences: military users of CBJTC and non-military users of CBJTC. The ITAM Environmental Awareness program is designed to improve their understanding of the effects of CBJTC mission, training, and activities on the natural resources of CBJTC. The ITAM Environmental Awareness program can also serve as a public outreach tool to educate the public and garner their support by effectively communicating the military mission at CBJTC and the level of success of natural resources management at the installation. When military users and the public are informed and educated about management practices and their benefits, they tend to lend support to the practice even if those practices are controversial.

One of the keystone pieces of this program is the *Field Card* for military users. CBJTC maintains a small museum exhibit in the Land Management Center that showcases some of the plants and animals present on CBJTC. Presentations are also provided to various groups about CBJTC and the natural resources present. Additional information on environmental awareness, beneficial partnerships, and public outreach is in **Section 3.0**.

4.1.2 Outdoor Recreation

CBJTC has extensive outdoor recreation opportunities, ranging from fishing and boating to camping, hiking, and hunting. The fishing and hunting program is described under fish and wildlife management (see **Section 4.6.2**). A portion of the Florida National Scenic Trail runs through the southern portion of CBJTC, and provides hiking, biking, and wildlife viewing opportunities.

All-terrain vehicles (ATVs) have great potential for damage to natural resources. No off-road driving for recreational purposes is permitted on CBJTC. Trespass by motor vehicle (includes an automobile, truck, van, bus, recreational vehicle, camper, motorcycle, motor bike, moped, go-cart, all-terrain vehicle, dune buggy, and any other vehicle propelled by motor) is covered under Section 375.251 FAC.

4.1.3 Public Access

AR 200-1 provides guidance for access to military lands and waters by recreational users. Based on this regulation, public access will be within manageable quotas subject to safety, military security, threatened or endangered species restrictions and cannot impair the natural resources. Limitations on public access will be enforced during training exercises to minimize safety risk.

Limitations on public access have been set in certain areas, particularly the Impact Area due to the presence of hazards related to training activities. Some possible threats to public safety related to training activities include active range use, UXO, and training infrastructure. For this reason, secured gates strictly control access to the Impact Area. As mentioned above, the Florida National Scenic Trail runs through the southern portion of CBJTC and is open to the public. When this area needs to be closed for training, the kiosk at the beginning of the trail is used to provide information on trail closures and any revised routes.

4.1.4 Natural Resources Law Enforcement

Many aspects of natural resources management require effective enforcement if they are to be successful. Such features as hunting/fishing harvest controls, protection of wetlands, water pollution prevention, rare species protection, and others are very dependent on law enforcement. At CBJTC, FFWCC law enforcement officers provide conservation and trespassing enforcement support. Military police and Range Control conduct routine patrols, observe all activities on the training site, and notify CBJTC-ED when environmental concerns are observed within CBJTC.

4.1.5 GIS Data Management

CBJTC has a significant amount of site-specific natural resources data. There is a dedicated GIS position for managing and maintaining environmental data at CBJTC. Access to maps generated from accurate and usable GIS data is essential for efficient natural resources management. In addition, it facilitates accurate analysis of potential effects of all future projects and activities. **Table 12** provides a summary of GIS data currently available for CBJTC.

Table 12. Summary of GIS Data Available for CBJTC

GIS Data	Source	Needs updating?
Boundary and training areas	CIP	No
Buildings	CIP	No
Fences & Gates	CIP	No
Transportation (pedestrian, roads, airfields, railroad, water docks)	CIP	Yes, helicopter landing zones
Utilities (electric, fuel, sewer, wastewater, utility poles, water hydrants, and tanks)	CIP	No
Communication (antennas)	CIP	No

Table 12. Summary of GIS Data Available for CBJTC		
GIS Data	**Source**	**Needs updating?**
Recreation (improved areas)	CIP	No
Elevations	CIP	No
Streams, lakes, watersheds, and other open water	National Hydrology Dataset	No
Wetlands	NWI	Yes
Floodplains	FEMA	No
Soils	NRCS	No
Natural Communities	FNAI	No
Rare species locations and areas	Biotech 2009, Nelson and Floyd 2011, and FLNG	Yes; periodically (as needed)
Aerial Imagery	Multiple Sources	Multiple years are available
Forest management (timber actions and planting activities)	FLNG	Yes; periodically (as needed)
Invasive species management (herbicide application, torpedo grass area)	FLNG	Yes; periodically (as needed)
Fire management (Including RxFire and firebreaks)	FLNG	Yes; periodically (as needed)
CIP = Common Installation Picture		

4.1.6 Operational Noise Management Plan

Army Regulation 200-1 describes the facets of an “Environmental Noise Program.”. Provides a plan to manage this environment through land use planning and being a responsible neighbor. In addition to noise assessment, the plan includes education of both installation personnel and surrounding residents, management of noise complaints, mitigation of the noise and vibration, and noise abatement procedures. The Florida Army National Guard Statewide Operational Noise Management Plan details the working operations and procedures for noise abatement and monitoring at Camp Blanding (**Appendix R**).

4.2 Soil Conservation and Sediment Management

GOAL SO: Manage soil to minimize sediment loss and erosion, while protecting water quality.

OBJECTIVE SO1: Maintain roads and parking areas to minimize the potential for erosion and sedimentation and to minimize establishment of invasive species.

OBJECTIVE SO2: Implement BMPs to minimize erosion, soil loss, and sediment deposition.

OBJECTIVE SO3: Maintain vegetation cover using native species.

OBJECTIVE SO4: Minimize nutrient and sediment inputs from soil to protect water quality.

OBJECTIVE SO5: Implement stabilization and recovery measures for areas not revegetating spontaneously.

Primary Regulatory Drivers

- Clean Water Act
- Florida Water Resources Act of 1972 (Chap 373 of F.S.)
- Section 403.0885 of F.S. (NPDES Program)

Surface water and groundwater quality is directly related to land management practices that affect stormwater runoff. Stormwater runoff is produced when rainfall during a storm exceeds the infiltration capacity of the soil or encounters an impervious surface. Stormwater runoff can be a significant source of pollutants as well as sediments to surface waters, especially in areas with impervious surface cover or where groundcover has been disturbed. Water quality also may be negatively impacted by disturbances causing increased sedimentation to wetlands and stream channels. Sources of stormwater runoff and pollution could originate from operational, maintenance, and/or administrative areas. Stormwater runoff from impervious surfaces has a high potential to carry pollutants into wetlands, surface waters, and groundwater. Impervious surfaces include roads, parking lots, taxiways, and buildings. On CBJTC, these areas are generally limited to the cantonment area and a few small areas with training infrastructure.

Two main types of soil erosion exist: wind erosion and water erosion. Several factors affect water erosion. These factors include rainfall, slope steepness and length, soil texture or erodibility, cover protecting the soil, and special practices such as terracing or planting on the contour. Sediment resulting from erosion affects surface water quality and aquatic organisms. These types of erosion can occur throughout CBJTC and can be a significant management concern, particularly in areas that have been disturbed for any reason. Erosion resulting from non-training activities is managed by either CBJTC-DPW or CBJTC-ED and erosion resulting from military training is managed by the ITAM program.

4.2.1 Regulatory Authority and BMPs

FDEP implements the National Pollutant Discharge Elimination System (NPDES) program in the State of Florida in accordance with Section 403.0855, F.S. The NPDES stormwater program regulates point source discharges of stormwater into surface waters of the State of Florida from certain municipal, industrial, and construction activities. As the NPDES stormwater permitting authority, FDEP is responsible for promulgating rules and issuing permits, managing and reviewing permit applications, and performing compliance and enforcement activities.

Stormwater management could be a concern at CBJTC; however, there are a number of mechanisms in place to protect water quality and soils from negative impacts from stormwater. CBJTC maintains a SWPPP and SPCCP in compliance with Florida requirements (FLARNG 2012, FLARNG 2000). The SWPPP describes the programs, BMPs, monitoring and other measures already used on CBJTC. There are also dedicated conservation areas within the Cantonment Area that are designed specifically to protect the water resources that occur within the Cantonment Area.

In addition to compliance with requirements associated with existing SWPPP activities, construction or other land-disturbing activity that results in soil disturbance (e.g., clearing, grading or excavating) of 1-acre or more must be permitted by FDEP under the NPDES permit program. The NPDES permit establishes the required erosion control and revegetation standards.

USEPA and FDEP are good sources for stormwater BMPs. The FDEP's *Florida Stormwater Erosion and Sedimentation Control Inspector's Manual* (FDEP 2018), and the USEPA's *Developing your Stormwater Pollution Prevention Plan: A Guide for Construction Sites* (USEPA 2007) are both useful references. FDEP also offers a suite of additional resources for specific activities related to nonpoint-source management at http://www.dep.state.fl.us/water/nonpoint/pubs.htm.

Due to the extensive forestry program, silviculture BMPs are also applicable across most of CBJTC. The FDACS developed the *Silviculture BMPs Manual* (FDACS 2008b). One of the key BMPs is the establishment of SMZs associated with water resources. CBJTC established SMZs around all water resources in the 1990s using the most protective buffers (see **Section 4.3.3** for additional discussion on SMZs). A copy of the FDACS manual can be found at: http://www.floridaforestservice.com/forest.html.

4.2.2 ITAM Program

A core component of the ITAM program is LRAM, which is specifically focused on preventing and recovering damage to vegetation and soils. CBJTC ITAM program representatives spend the majority of their time revegetating disturbed land (see **Section 4.2.4** and **Appendix O**) and monitoring the training site for potential erosion or sedimentation concerns. To a lesser degree, they also conduct trail stabilization and install low water crossings, when needed. Previously, cable concrete trail crossings were installed at various locations, which have reduced the amount of silt added as a result of routine traffic.

4.2.3 Erosion Control Guidelines

Improper erosion control can lead to CWA violations, thus potentially resulting in fines and other penalties, which may ultimately compromise the integrity of CBJTC as a viable training installation. Regardless of regulatory compliance, appropriate soil conservation and erosion control are vital to the military mission. Unmanaged and extensive soil erosion can threaten the military mission and require diversion of funds from other priorities. Delays in managing the erosion can increase the cost to repair by several orders of magnitude. Some examples of the potential effects of poor soil and erosion management include:

- Undermining of roads
- Loss of topsoil and vegetation, which further accelerates erosion
- Impacts to streams or other aquatic habitats, potentially resulting in water quality impairment

- Creation of unusable areas due to erosion.

As discussed in **Section 2.2.4**, soils at CBJTC are generally sandy with a high potential for erosion. However, in general, soil erosion at CBJTC is rather limited because slopes are generally minimal, tracked and wheeled vehicle usage is low, and revegetation of bare areas is relatively easy due to an abundance of rainfall and warm temperatures (Hall et al. 1997). Only 1 percent of CBJTC soils require very careful management due to risk of erosion (Albany fine sand, 0 to 5 percent slopes), but most soils on the training center require special treatment and consideration when planning for land use and rehabilitation, especially regarding wetness (see **Table 6** and **Map 4**). These sandy soils dry out rapidly and are generally nutrient poor, which strongly favors native plants adapted to those conditions. Sandy soils are also more likely to allow pollutants to leach into groundwater and water resources, so maintenance of vegetation buffers is essential to minimize this risk.

FLARNG will assess the potential erodibility of a site during planning of new development, training, and other land uses. FLARNG will continue soil erosion management practices including institutional, structural, and vegetative practices.

- **Institutional practices** are procedures, policies, or regulations that ensure operations are conducted in a manner that minimizes their impact.
- **Structural practices** include permanent construction to install erosion-resistant surfaces, stabilize drainage, and modify slopes to reduce runoff velocity and trap sediments on-site.
- **Vegetative practices** consist of establishing live plants on erosive or exposed surfaces. Plants stabilize slopes by binding soils with their roots, shielding soils from rainfall impact, interrupting surface runoff by roughening the surface, allowing more water to infiltrate rather than run off over the surface, trapping sediments in runoff, and wicking moisture out of soils by evapotranspiration. In addition, vegetative practices are self-regenerating and relatively maintenance free.

4.2.4 Revegetation Management Guidelines

Success in revegetating disturbed sites depends on the chemical and physical properties of the soil. Correct pH, phosphorus levels, and nitrogen fertilization are necessary for degraded lands to be re-vegetated. Application procedures should include soil analysis to determine proper nutrient application levels. Other factors to consider are soil moisture, soil organic matter, and weather patterns.

Generally, revegetation using native plants does not require fertilizer, which can favor non-native species. If fertilizer is applied, choose and apply fertilizer according to the soil test results. Fertilizers should be incorporated as appropriate for the plants being used, and should not be applied when soils are wet. In wet soils, salt forms from the fertilizer, which can significantly reduce the percentage of seed germination, especially with grasses.

Specific recommendations concerning revegetation at CBJTC are as follows.

- Maintain existing vegetation buffers around water resources.
- Generally, CBJTC will revegetate itself as long as the soil is stable. Mulch or other soil stabilization method can be used to stabilize soils until plants germinate.
- If an area does not revegetate readily, conduct a soil test and incorporate the minimum soil amendment necessary.
- If an area still does not revegetate spontaneously, only use native genotypes during restoration and landscaping projects. A list of native plants suitable for landscaping is available at and discussed in **Section 4.4.9**.
- Plants prohibited by FDEP or US Department of Agriculture (USDA) will not be used on CBJTC.

4.3 Water Resources Management

GOAL WA: Maintain water resources so they remain resilient, functional, and with no net loss of acreage.

OBJECTIVE WA1: Minimize impacts to water resources, including wetlands, and comply with all laws pertaining to water resources.

OBJECTIVE WA2: Minimize nonpoint-source pollution through implementation of BMPs and following existing spill prevention and hazardous materials management protocols.

OBJECTIVE WA3: Maintain or enhance vegetation buffers around water resources.

Primary Regulatory Drivers

- Clean Water Act
- AR 200-1
- EO 11990
- EO 11988
- Florida Water Resources Act of 1972 (Chap 373 of F.S.)
- Section 403.088 and 403.0885 of F.S. (NPDES Program)
- FAC 62-621.300

CBJTC has numerous and significant water resources, including wetlands, perennial streams, and perennial lakes. For a complete summary of water resources on CBJTC see **Section 2.5**. Wetlands are some of the most productive habitats, and often provide migration corridors for a variety of species. In addition to the goal, objectives, and management strategies presented here, those presented in **Section 4.2** also contribute to the management of water resources.

As described in **Section 3.5**, climate change is likely to increase the variability of precipitation and increase water temperature in Florida. Depending on how things change, water resources could be significantly impacted, either be expanding or shrinking. While water resources are highly likely to be impacted, it is impossible to determine at this time how they will be impacted.

4.3.1 Regulatory Requirements

The USACE regulates the discharge of dredged or fill material into “waters of the United States”, including wetlands, under Section 404 of the CWA. Even an inadvertent encroachment into waters of the US resulting in a displacement or movement of soil or fill material has the potential to be viewed as a violation of the CWA if an appropriate permit has not been issued by the USACE. Waters of the US are defined under 33 CFR 328.3(a) and referred to as jurisdictional waters. Jurisdictional waters may include coastal and inland waters, lakes, rivers, ponds, streams, intermittent streams, vernal pools, wetlands, and other waters, that if degraded or destroyed could affect interstate commerce. Section 401 of the CWA gives the State of Florida the authority to regulate, through the state water quality certification program, proposed federally-permitted activities that may result in a discharge to water bodies, including wetlands.

For an area to be classified as a delineated wetland, three conditions must be present: (1) wetland hydrology; (2) hydric soil; and (3) hydrophytic vegetation. Areas that may be periodically wet, but that do not meet all three criteria, are not classified as “delineated” wetlands. Once a delineation is complete, then a jurisdictional determination can be made, which is dependent upon the relationship of the wetland to waters of the US.

Chapter 373 of F.S. mandates the state agency to implement the State’s surface water regulatory program, which covers virtually any movement of soil surface or construction anywhere in the peninsula of Florida, from coast-to-coast, including uplands and wetlands. Pursuant to the environmental provisions of F.S. 373.414, the State has jurisdiction over those areas that are delineated as wetlands, including all isolated wetlands, under the State methodology. The Florida Water Resources Act established five WMDs within the State of Florida to assist in the management of state waters. Clay County is located in the St. John’s River WMD, which encompasses 18 counties in north central Florida. The St. Johns River WMD is responsible for managing the ground and surface water supplies of the region. Duties of the District include permit issuance, land acquisition, water quality and quantity research, ground and surface water mapping, and outreach and public education. Each of the five districts maintain a separate operating agreement with FDEP that outlines which agency will process Environmental Resource Permits (ERPs) for particular projects. The Florida ERP combines the former dredge and fill permit issued by FDEP (i.e., Section 401 CWA) and the management and storage of surface waters permit issued by the WMDs.

Management of wetlands on federal lands and military installations is further indicated by EO 11990 and DoDI 4715.03, respectively. Under those instructions, wetlands are required to be managed for “no net loss” on federal lands, including military installations. In support of these policies, long- and short-term adverse impacts associated with the destruction or modification of wetlands and support of new construction in wetlands should be avoided to the maximum extent possible.

FEMA-designated floodplains are protected under EO 11988 – *Floodplain Management*. The purpose of EO 11988 to reduce the risk of flood loss, minimize the impacts of flooding, and restore and preserve the natural and beneficial values of floodplains when acquiring, managing, or disposing of federal lands.

4.3.2 Permitting

As discussed above, USACE, FDEP and St. John's River WMD have jurisdiction over water resources. The USACE issues Nationwide Permits (NWPs) and a State Programmatic General Permit (SPGP) that cover many routine or minor projects. The USACE issues Individual Permits for larger projects, or those that do not meet the requirements of an NWP or SPGP. The USACE and Florida have adopted joint ERP and wetland resource application. Under the Operating Agreement between USACE Jacksonville District, FDEP and St. John's River WMD, all applications should be submitted to FDEP or WMD, as applicable. If the project does not qualify for a SPGP, the application will be forwarded to USACE by FDEP or WMD. The ERP Program regulates activities involving the alteration of surface water flows. This includes new activities in uplands that generate stormwater runoff from upland construction, as well as dredging and filling in wetlands and other surface waters.

Permitting requirements vary depending on type, location, and extent of disturbance. Prior to initiating projects or activities (e.g., dredging, filling, work in and around a stream or wetland) occurring within or with the potential to affect a floodplain, wetland, or other water body, the appropriate agencies (USACE, FDEP or St. John's River WMD) should be consulted to determine permitting requirements.

NPDES permits for construction are not integrated into the ERP permit, and are issued separately. Construction related NPDES permits are discussed in **Section 4.2.1** and the new NPDES Florida Pesticide Generic Permit is described below.

As a result of new USEPA ruling, FDEP has issued a new permit through its NPDES Program under the provisions of Section 403.088 and 403.0885, F.S. The new NPDES Florida Pesticide Generic Permit pertains to pesticide applications on waters of the state and land areas adjacent to waters of the state, and is consistent with the USEPA pesticide general permit requirements published under 40 CFR 122. This NPDES general permit is applicable to all persons who discharge pesticides to waters of the state from the application of biological pesticides or chemical pesticides, which leave a residue of the pesticide or its degradants. The following categories of pesticide discharges are covered under this general permit: (1) mosquitoes and other flying insect pest management, (2) aquatic weed and algae control, (3) aquatic nuisance animal control, and (4) forest canopy pest control. Waters that are designated as Outstanding National Resource Waters (ONRWs) or on the CWA 303(d) list do not qualify for this permit. No surface waters within CBJTC are currently classified as an ONRW or 303(d) water.

The submission of a notice of intent (NOI) and development of a Pesticide Discharge Management Plan under this general permit are required for certain operators in Florida pursuant to subsection 62-621.300(8)(b), FAC. Operators required to complete an NOI include mosquito control programs and districts, WMDs, USACE, USFWS, FFWCC, FDACS, USDA, USFS, and US National Park Service. A complete list of operators and other permit provisions are provided in 62-621.300, FAC.

4.3.3 Riparian Zones and SMZs

Riparian zones are lands adjacent to streams, rivers, lakes, and wetlands. They are important features within CBJTC as they intercept overland drainage, reduce streambank erosion, help trap sediments and

nutrients, filter water and replenish groundwater reserves, and help to moderate flooding. See **Section 4.4.7** for vegetation management guidelines associated with riparian zones.

A SMZ is a BMP that is designated and maintained during silviculture operations to protect water quality within nearby streams, lakes, and other waterbodies. The SMZ width is based on the size and type of the waterbody and the local soils type and percent slope, which include the likelihood of erosion and sedimentation concerns. In the 1990s, SMZs were designated around streams, lakes, and other waterways within CBJTC. The sizes of the SMZs were defined based on field observations and the criteria set forth in the *Silviculture BMPs Manual* (FDACS 2008b). Wherever timber cruise lines cross a waterway, the stream width and the slope of the adjacent banks were measured and recorded. The highest value for width and slope along major stretches of each creek or tributary were used as the values for the full length of that stream or tributary. This conservative approach to SMZ delineation will assure maximum protection for the waterways.

SMZ widths range from 60 feet on each side on many streams (e.g., North and West branches of Bull Creek, all branches of South Fork Black Creek, and waters in the east unit and southeast corner of CBJTC) up to a maximum of 300 feet on each side of several streams with steep slopes (South branch of Bull Creek, South Fork Black Creek, Lowry Lake, Magnolia Lake, and streams between lakes). SMZ width was set at 200 feet throughout the drainage of the North Fork Black Creek, which has been designated as an OFW. SMZs were also delineated around each of the lakes at the south end of CBJTC as well as a small portion of the south shore of Kingsley Lake.

In most cases, the SMZs include both primary and secondary SMZs, which vary in the types of operations that are allowed or not allowed in them (see management criteria below). Primary zones are applied to OFWs, ONRWs, Class I Waters, wetlands (in some cases), and perennial streams, lakes and sinkholes. Primary zone widths range from 35 to 200 feet on either side of the waterbody, and have significant timber harvesting restrictions. Secondary zones are applied to intermittent streams, lakes, and sinkholes; they can also be added along primary zones for added protection. The secondary zone is always a minimum of 35 feet wide on each side of the waterbody and can be as much as 300 feet.

A brief summary of the primary and secondary management criteria is provided below. For more information on SMZ management criteria, refer to FDACS's (2008) *Silviculture BMPs Manual*.

Primary Zone Management Criteria

- Clearcut harvesting is prohibited except for special conditions described in the *Silviculture BMP Manual*. Clearcut harvesting is always prohibited within 35 feet of all perennial waters and within 50 feet of all waterbodies designated as an OFW, ONRW, or Class I Water.
- Selective harvesting may be conducted to the extent that 50 percent of a fully stocked stand is maintained. The residual stand should conform to the specific criteria in the *Silviculture BMP Manual*.
- Trees within stream channels or on the immediate stream bank should not be harvested.
- Special emphasis should be given to protection of very large trees and/or old trees, snags, cavity trees, and trees where any part of the canopy overhangs the water.

- The following are prohibited: mechanical site preparation; loading decks or landings and log bunching points; main skids or new road construction except to approach a designated stream crossing; aerial application or mist blowing of pesticide; cleaning spray equipment or discharging rinse water from pesticide or fertilizer applications; site preparation burning on slopes greater than 18 percent; and no plowed pre-suppression fire lines.

Secondary Zone Management Criteria

- No timber harvesting limitations exist within the secondary zone.
- The following are prohibited: mechanical site preparation; main skids or new road construction (except for stream crossing), loading decks or landings; site preparation burning on slopes greater than 18 percent; and no plowed pre-suppression fire lines.

4.3.4 Management Guidelines

In general, water resources are managed through conservation and impact avoidance. Although water quality monitoring is not required, it is a good way to measure ecosystem health. Land-based environmental degradation eventually affects water quality and aquatic ecosystems. The following strategies are implemented to ensure compliance with regulations and to protect and enhance water resources at CBJTC.

- Maintain riparian zones and SMZs around water resources in accordance with FDACS's (2008) *Silviculture BMPs Manual (*see **Section 4.3.3** above).
- Adhere to BMPs for construction and forestry activities as described in applicable manuals and CBJTC SWPPP and SPCCP (see **Section 4.2.1**).
- Do not allow vehicles within known wetland areas, unless on established roads and crossings.
- Restrict vehicles from within 30 feet of water resources except where established crossings and roads exist.
- Review operations and maintenance programs that potentially affect water resources, and develop procedures and guidelines to avoid the loss of function.
- Consult with CBJTC-ED prior to initiating projects with the potential to disturb water resources as far in advance as possible; permits are necessary for projects that result in temporary and/or permanent impacts (see **Section 4.3.2**).
- Avoid the net loss of size, function, or value of wetlands and modification of floodplains and wetlands where there are practicable alternatives. Where no practicable alternatives exist, obtain an ERP and mitigate unavoidable impacts on wetlands and water resources functions.
- Minimize the amount of impervious surfaces in newly developed areas.
- Manage invasive species to promote desirable native species.
- Minimize the use of pesticides and herbicides, and adhere to the NPDES Florida Pesticide Generic Permit (see **Section 4.3.2**).

4.4 Vegetation Management

GOAL VE: Manage vegetation to provide a variety of habitats to support the military mission, maintain native species, provide a sustainable forestry program, and enhance wildlife habitat

OBJECTIVE VE1: Provide a balanced and continuous array of forest types for both military training purposes, rare species, and wildlife habitat, including natural and plantation pine stands with open understories, natural mixed hardwood and pine-hardwood uneven-aged stands, and sandhill communities (from FRMP).

OBJECTIVE VE2: Maintain sustainable and even-flow revenue from harvest of forest products and other resource uses, primarily from the land base that already exists as plantations and natural stands that are in the process of being converted to plantations (from FRMP).

OBJECTIVE VE3: Maintain and enhance stand conditions favorable for RCW cluster sites and foraging habitat and for other threatened and endangered species (from FRMP).

OBJECTIVE VE4: Restore formerly mined lands that DuPont has returned to CBJTC (from FRMP).

OBJECTIVE VE5: Practice preservation management in ecosystems along, and around, waterways, with SMZs that meet or exceed Florida standards for BMPs (from FRMP).

OBJECTIVE VE6: Maintain and restore riparian and wetland habitat to benefit rare species, wildlife, and water quality.

OBJECTIVE VE7: Maintain and restore scrub habitat to benefit rare species, wildlife, and soil stabilization.

OBJECTIVE VE8: Conduct a vigorous prescribed burning program, as the weather allows, that will reduce wildfire hazards, enhance and improve military training, promote natural ecological processes and functions, improve wildlife habitat primarily for sensitive, and support continued recreational hunting (from FRMP).

OBJECTIVE VE9: Monitor the results of habitat management efforts, appropriate to the management objectives and projects completed for a given area.

OBJECTIVE VE10: Manage and, preferably, eradicate invasive, non-native plants to minimize their impact on CBJTC native species and ecological integrity.

OBJECTIVE VE11: Maximize native plants and avoid invasive non-native plants in landscaping and revegetation projects.

OBJECTIVE VE12: Minimize chemical and maintenance inputs during grounds maintenance.

Primary Regulatory Drivers

- SAIA
- AR 200-1

Vegetation management includes riparian and forest management, fish and wildlife habitat management, and rare species habitat management. There is a significant overlap in the objectives and management strategies within this section and all other sections within the INRMP, which is indicative of the essential role vegetation plays in ecosystems and in natural resources management. The ecosystem

management approach used at CBJTC incorporates multiple techniques including prescribed fire (see **Section 4.5**), forestry, and invasive plant control (see **Section 4.8**) to help maintain the habitat mosaic.

The majority of vegetation on CBJTC includes dense forests of wetland hardwoods that gradually change to extensive flatwoods of natural and planted pine, which ultimately grade into deep sandhill habitats dominated by longleaf pine or turkey oak. The desired future condition of CBJTC is to have vegetation appropriate to the soils and hydrology found within the natural ecosystem. All river, lake, and creek systems will be surrounded by functioning riparian zones, continuous throughout a watershed and connected to other watersheds by mixed species corridors. Pinelands will be a mosaic of mature flatwoods, mixed hardwoods stands, and pine plantations. Some existing plantations around RCW or other critical habitat zones will be restricted to only thinning, with a larger average diameter. Xeric habitats, primarily sandhill, will include both open longleaf pine and mixed pine-oak stands, with a substantial reduction in the moderately high densities of turkey oak that currently occupy many areas. Existing sand pine plantations will slowly be phased out and replanted with longleaf pine. The driest habitats will be scrub. Fire will be regularly applied throughout these habitats, as well as in many of the pineland and upland stands. See **Section 2.3.2** for a detailed discussion of vegetation communities on CBJTC. Rare communities found on CBJTC include sandhill (GS/S2), scrub (G2/S2), upland mixed woodland (G2/S2), and wet prairie (G2/S2).

4.4.1 Historic Vegetation

Following the clearing of most of the original forests in northern Florida in the late 1800s and early 1900s, repeated burning, extensive grazing, and turpentining operations kept much of the land open for extended periods of time (FLNG 2005). Eventually, natural regeneration produced the extensive secondary forests that covered CBJTC when it became a training site in the 1940s. In the decades that followed, many of the second growth stands developed into the older natural stands that cover much of CBJTC today.

Beginning in 1952, timber harvesting again became a major management activity at CBJTC with products including fence posts, hardwood timber, veneer, pulpwood, sawlogs, and poles. In 1962 the first documented forest management plan for CBJTC was developed for projected activities and levels of harvest that would likely be necessary for a sustained yield of forest products. Those levels were generally followed over the last 50 years, except for large harvests in 1967, 1968, 1983, and the early 1990s. Revenue from past timber cuts has supported many CBJTC operations, and sustained yield in forest products revenue is important for the continued support of these operations.

Since the early 1950s, harvesting has been conducted almost completely in naturally regenerated stands, and cutover sites have been historically restored with plantations of slash pine, but are now being restored with longleaf pine. Various combinations of broadcast seed or natural regeneration from seed trees or shelterwood overstories have also been used on several sites.

4.4.2 Forestry Program

There is an active forestry program on CBJTC, which is presented in detail in the FRMP (FLNG 2005) included as **Appendix F**. For planning purposes, CBJTC is divided into four management units (North, East, Kingsley, and South) and 119 composite stands. Timber management is concentrated in forest types with a substantial pine component (for economic efficiency) and avoids both the very poorly drained (for

water protection) and very well drained (because of low productivity) habitats. Timber production for commercial harvest is concentrated on slightly more than 12,000 acres that are currently covered by slash pine and longleaf pine plantations, or have been recently regenerated using seed tree methods. Locations of these plantation areas, as well as all other stands, are presented in the FRMP. The current plantation acreage will remain roughly the same in the future with slight adjustments to allow the conversion of certain plantations back to natural stands and still maintain constant plantation acreage. There are certain plantation acreages that are being shifted to new areas to allow those plantations to be thinned and converted into pseudo-natural stands for the RCW.

Plantation management is based on 40-year rotations with intermediate thinning at roughly 20 and 30 years into the rotation. Management practices include site preparation that relies on chopping, burning, and herbicide control of competing vegetation rather than the more intensive bedding practice used in much of northeastern Florida. FLARNG attempts to use prescribed fire and other non-chemical techniques as a first priority. However, occasionally herbicide application is necessary as a forestry management technique for pine release. Herbicide is only used to reduce competing vegetation as a last resort. Some years no herbicide usage is necessary for pine stand management, while during other years larger blocks of land may undergo herbicide application.

Regular prescribed burning schedules will reduce the dense understory that has developed in many forest stands. Slash pine plantations on suitable sites will be selectively harvested to maintain a base longleaf pine residual stand, and then underplanted with longleaf pine to restore native vegetation. Revenue from other forest management activities such as thinning hardwoods in RCW foraging habitat, or salvage harvest will be considered supplemental to the basic timber management plan. All other stands (approximately 70 percent of the forests) will be regenerated naturally and will be the primary resource for meeting forest management objectives, such as thinning natural pine and mixed pine-hardwood stands to enhance RCW habitat, improving military training functions, implementing salvage operations to limit fire damage or beetle outbreaks, or converting turkey oak dominated sandhills to longleaf pine ecosystems.

In general, longleaf pine is the species of choice for timber on CBJTC. This is due to several reasons. Longleaf pine was the dominant native pine species on CBJTC, and it has a higher resistance to prescribed fire and bug damage. Stands will be evaluated on a site by site basis for species recommendations in replanting. There are conditions when other species are more appropriate.

General Guidelines for Forestry Program

- Implement *Silviculture BMPs Manual* (FDACS 2008b) during all forestry operations.
- Minimize soil erosion during harvesting by using selective harvesting as a primary harvesting method.
- Clearcut harvests in individual stands will be limited to a maximum size of 100 acres in almost all situations (the only exception being some specific sand pine harvests). Where stands are larger than 100 acres, they will be either subdivided into smaller cutting units by leaving residual buffer strips between cutting units, or they will be split into smaller units for harvesting.
- Do not clearcut outside plantation areas or where there are multiple habitat types
- Avoid wetland firebreaks when possible.

- Do not suppress fires in wetlands unless the organic matter poses a risk of long-term smoldering and smoke management.
- When fireplow lines must be used, reworking harrowing will lessen the impact to the landscape.
- Prevent conflicts between forest management and training activities by yearly coordination of forest management activities and training activities.
- Create connections or linkages between isolated wooded areas using riparian corridors, shelterbelts, and by planting trees in open areas surrounding forest patches.
- Minimize permanent clearings within existing large forest patches, and locate roads where they will not disconnect adjacent tracts of forest or impact riparian zones and streams.

Guidelines for Forestry to Benefit RCW (see Section 4.7)

- In all clearcut areas near RCW cluster sites or within foraging ranges, small clumps of mature trees will be retained in scattered locations to provide large, older trees within the stand for possible future RCW colonization.
- Plantations that provide RCW foraging habitat will only be periodically thinned and will gradually be converted to mixed-age stands. Approximately 2,000 plantation acres will be removed from the timber production base for this purpose, and will be replaced with conversion of 1,900 acres of mixed pine and pine hardwood stands to plantations. These conversions are located outside all RCW cluster buffer zones of ½ mile (500 acres). Natural pine stands in some of the RCW management areas provide sufficient foraging habitat and plantations within those RCW circles will continue to be managed as plantations.
- As long as an RCW cluster has 200 acres of high quality forage within the ½-mile buffer zone (500 acres), the remainder of the buffer zone can be actively managed for wood production using a modified clearcut harvest. A modified clearcut involves a heavy thinning to 25 – 35 square feet of basal area. The harvest will be accomplished in the form of a low thin, removing first the smaller diameter trees, but leaving the residual trees mainly in longleaf pine. This procedure is similar to a slightly less intense shelterwood cut. The remainder of the trees will be high quality, large diameter trees of a basal area still suitable for RCW forage. After a year, a light site preparation involving mainly raking is undertaken and the stand is underplanted with longleaf pine at around 300 to 500 trees per acre.

4.4.3 Restoration and Management of Longleaf Pine in Flatwoods

Due to the history of harvesting, overharvesting, and replanting with unsuitable pine species, CBJTC is currently undergoing a long-term, large-scale restoration of longleaf pine forest over more than 50 percent of the facility. Restoration is primarily occurring in the flatwoods (approximately 15 percent of CBJTC) and sandhills (approximately 20 percent of CBJTC) areas, although some will also occur on the former DuPont mining leases (TAs MA1, MA2, S11, S12 and S13). While there is still some longleaf pine throughout the flatwoods, some stands will require more significant input to restore longleaf pine as the dominant tree species, while others may only require minor, but strategic efforts (e.g., prescribed fires) to encourage natural recovery.

- ***Natural Stands***: Composite stands that are predominately of natural origin will be maintained with their natural uneven-age or several-age structure. At cutting cycles of approximately 25 years, stand density will be reduced to basal areas between 60 and 80 square feet (sq-ft) per acre. These periodic removals will be used to maintain favorable densities for RCW foraging habitat where necessary, and to open all stands sufficiently for development of some natural regeneration. There are currently very few natural stands with average densities above 70 sq-ft of basal area, so these uneven age cutting cycles will not provide any substantial supplemental revenue in the near future. Removals should be across the range of stand diameters and species, except where RCW requires retention of large diameter trees or other objectives call for favoring particular species, such as longleaf pine. Specific guidelines will be developed for each composite stand based on stand-specific inventory information. Prescribed fire will be used on approximately 3- to 5-year cycles.

- ***Plantations***: Most existing plantations will continue to be managed as even-age stands for timber production with a rotation age of around 40 years. This provides the opportunity for intermediate thinning (at ages 20 and 30 years), which will favor production of higher value trees for final harvest than in typical pulpwood rotations. Stands with large trees will also provide longer periods of tree cover between clearcuts than with short rotation pulpwood management. The open stand structure with large trees will benefit wildlife species that favor overhead tree canopies for cover or foraging as well as military training exercises that require such conditions.

4.4.4 Restoration and Management of Longleaf Pine in Sandhills

Approximately 32 percent of CBJTC has well-drained to very well-drained sandy soils characteristic of higher points on the central Florida ridge, which support upland plant communities varying from longleaf pine-turkey oak-wiregrass to sand pine to xeric oak scrub. Due to the absence of fire and historical overharvesting of longleaf pine, turkey oak now dominates many of these sandhill areas.

On the North, Kingsley, and East Management Units much of this restoration will occur concurrent with regeneration in adjacent stands. The South Post of CBJTC will be the main focus for large scale longleaf pine restoration. Recent clearing of large sand pine stands in southern CBJTC has allowed for restoration of longleaf pine. A systematic reduction of turkey oak on South Post through natural, chemical, and harvest methods whenever possible will be undertaken. This will decrease the hardwood competition in these stands and allow for a release of the current stock of longleaf seedlings and saplings present. Underplanting will be used where necessary to boost the number of longleaf trees per acre to acceptable stocking levels. Fire will be used to control future hardwood resurgence and resprouting from the remaining root stock.

Strategies for Sandhills Restoration

- ***Sand Pine Stands:*** Harvest and remove on a large scale existing sand pine stands while retaining any volunteer or original longleaf pines. This operation is dependent upon market fluctuations and may not always be a viable option. After a harvest there is generally 10 to 40 longleaf pines left per acre. Stands will sit for two to three years to allow the sand pine to recolonize. The stands will then be burned and/or chopped, and finally replanted with containerized longleaf pine.
- ***Turkey Oak Stands:*** Harvest turkey oak dominated stands. This operation is again largely dependent upon the available markets and may not be an option. These stands are generally

underplanted with containerized longleaf pine seedlings if natural regeneration is less than 200 longleaf pine seedlings per acre. Combinations of fire and herbicides (primarily hexazinone, spot applied to control turkey oak sprouts) will be used either for site preparation or after planting to ensure seedling establishment. As mentioned above, herbicide applications are only used as a last resort when fire or other nonchemical methods do not sufficiently control competing vegetation.

- ***Other Areas:*** Areas where a certain amount of canopy is necessary at all times allows for a higher tree per acre underplanting of containerized longleaf pine. As the longleaf pine seedlings begin to grow and form an independent canopy, the original stand of turkey oak or sand pine will be controlled by whichever method is the most efficient, with a priority placed on nonchemical methods first: harvest, fire, or herbicide.

4.4.5 Restoration of Former DuPont Mining Lease

Mining activities on CBJTC began in the late 1940s and have been concentrated on the western boundary of the property (TAs MA1, MA2, S11, S12 and S13). E.I. du Pont Nemours and Company (DuPont) renewed earlier lease agreements in 1968 for mineral sand mining and most recently for mineral extraction. Mining activities at CBJTC ceased in 2008. As DuPont finished mining an area, they conducted reclamation to the level required by regulators at the time, which varied depending on when the original mining occurred. Some of these areas were not rehabilitated at all and are essentially sand dunes. Other areas are still being rehabilitated by DuPont, primarily with slash pine. With the expiration of these leases, CBJTC has taken on a significant management effort to complete restoration of these areas to longleaf pine over the long term (i.e., 40 or more years). It is unreasonable to expect that pre-mining conditions can be obtained without the re-creation of a hardpan and the moisture properties that a broad, relatively impervious soil horizon gives to the environment.

Beginning in 2004, CBJTC undertook a program to restore the ecologically sterile areas from the rehabilitated DuPont mining lease known as the DuPont Dunes. Taking advantage of abundant organic material after the hurricanes in 2004 and 2005, CBJTC placed chipped organic debris on the dune areas. The long-term goal is to create pine plantations in most of these areas. Depending on the rate the mulch breaks down, this may take as long as 10 years. These new plantations could eventually replace acreage lost to RCW management in other areas of CBJTC. Currently some areas are planted in unsuitable pine species; species selection for new plantation areas will take into account soil condition and hydrology.

These severely disturbed lands should also be considered a suitable choice for high impact activities such as tracked vehicle operations, rather than disturbing other areas.

Guidelines for Restoration of DuPont Mining Leases

- Place 18 to 24 inches of organic mulch and periodically disk into the sand to rebuild organic content and begin plant colonization process.
- Annually monitor areas with applied mulch for invasive plant infestation.
- Once soil condition has improved, introduce wiregrass and other herbaceous plants to assist with reestablishing a fire regime.
- Plant pine species suitable for the soil condition and hydrology, with an emphasis on longleaf pine.
- Evaluate the utility of mimicking scrub habitat in some of these areas to stabilize soil and provide wildlife habitat.
- Evaluate the utility of saw palmetto in the restoration and management of these areas.
- Once sufficient vegetation is established, initiate prescribed fire program to further natural regeneration.

4.4.6 Scrub Management

Scrub habitat covers approximately 3 percent of CBJTC. Scrub habitat on CBJTC is the northernmost example of interior scrub, an endangered plant community that is endemic to peninsular Florida. Three species, in particular, are dependent on the scrub ecosystem: the Florida scrub-jay, Curtiss' milkweed, and little ladies'-tresses, as well as many lichens and bryophytes.

The scrub vegetation community is usually dominated by shrubby oaks and/or Florida rosemary, often with an overstory of scattered sand pine. This habitat occurs at higher elevations, on well-drained, infertile, sandy soils. Scrub is a fire-dependent ecosystem that is adapted to periodic destruction by fire only to increase in stature until the next fire. Its physical structure and appearance varies with the length of time since the last fire. Infrequent fires, occurring once every 5 to100 years, maintain scrub habitat.

Guidelines for Scrub Management

- Use prescribed fire and mowing for maintenance of scrub habitat. Conduct prescribed burns (from February to July) in selected units to deter the invasion of off-site plants. Target burn parameters so as to encourage a mosaic effect. Never mow or burn the same area two years in a row.
- Allow prescribed head fires to burn into wetlands and die out naturally. This will maintain the natural variability. Head fires leave some areas intensely burned, some areas lightly burned, and some unburned, creating the habitat mosaic that ensures the survival of all scrub species.
- Monitor indicator species (i.e., Florida scrub-jay, Curtiss' milkweed) annually in scrub habitat in coordination with FFWCC.
- Manage, and eradicate, if possible, invasive non-native plant and animal species.

4.4.7 Riparian and Wetland Management

Approximately 22 percent of CBJTC is covered by wetland and riparian habitat. Riparian zones are also important habitats for wildlife because the vegetation they support is often unique and very diverse. Due to the linear nature of riparian zones, they also tend to be used as travel corridors by wildlife. Composite stands that occupy cypress domes, hardwood or bay swamps, very poorly-drained pine-bay habitats, or other wetland habitats will be managed for protection of water resources and wildlife that occupy those habitats.

At CBJTC, SMZs have been designated around streams, lakes, and other waterways (see **Section 4.3.3**). The SMZs essentially protect riparian and wetland habitat on CBJTC during forestry operations. Military activities are also generally limited in these areas. Refer to **Section 4.3** for more details on water resources protection and management, including guidelines for protecting water quality. The guidelines presented here are specific to the vegetation management in these areas.

Guidelines for Riparian and Wetland Habitat Management

- Prescribed burning in adjacent stands will be allowed to burn into pine-bay stands whenever possible in order to reduce the extensive fuel loads and dense understories that have developed in those transitional communities in the absence of fire.
- Harvesting will only be used to meet objectives other than timber production, and in those situations it will be conducted as partial harvests followed by natural regeneration.
- Mechanized operations will be prohibited from causing adverse impacts, such as sediment loading in adjacent wetlands and watercourses.

4.4.8 Vegetation Management in Direct Support of Military Training

As described in the Range Complex Master Plan (FLNG 2011b), there are some vegetation management requirements specific to certain types of military training infrastructure. Vegetation management for these purposes is primarily accomplished through the ITAM Program. In general, key training areas should be maintained as open areas with little to no encroachment of woody species. The condition of training infrastructure is monitored by the ITAM program.

Guidelines for Vegetation Management for Military Training

- ***Artillery Firing Points (AFPs):*** AFPs requiring re-vegetation will need to be planted in either the winter or spring of the designated year, depending on the type of seed (native vs. non-native). If a firing point needs to be enlarged, ITAM personnel will coordinate with CBJTC-ED for the protection of the listed imperiled species. Enlargements are also coordinated with forestry operations to clear harvestable timber from the area.
- ***Landing Zones (LZs) and Weinberg Drop Zone (DZ):*** LZs and the DZ should remain fairly level without eroded pits from rotorwash. Woody species should be removed with herbicide treatment when uptake of the chemical by the plants is at its highest rate (during the summer months, typically May-July). LZ's requiring revegetation will need to be planted in either the winter or spring of the

designated year, depending on the type of seed (native vs. non-native). Topsoil is generally spread in rotor wash created cavitations during the winter months when heavy equipment is more readily available.

- ***Dismounted Training Areas:*** Established pine stands should be burned on a 3 to 5-year rotation to maintain an open understory for military training (see **Section 4.5** for more on the wildland fire program). Where practical and necessary, treatments such as mechanical thinning and herbicide treatment may be used to reduce the understory.
- ***Trails:*** Trails should be maintained so as not to become soft and should remain relatively free of potholes. Trails maintained by the ITAM program have a firm surface to reduce the frequency of mired vehicles, using limerock and similar substrates. Potholes and undercut areas should be maintained regularly for safety and to prevent degradation of trails.

4.4.9 Landscaping and Grounds Maintenance

Landscaping and grounds maintenance on CBJTC are limited to the Cantonment Area, with some grounds maintenance within range areas. All landscaping and ground maintenance activities must follow the IPMP (FLARNG 2017). The following recommended landscaping practices should benefit the environment and generate long-term cost and maintenance time savings. The use of native plants not only protects biodiversity and provides wildlife habitat, but it can also reduce demands for fertilizer, pesticides, and irrigation and their associated costs.

Guidelines for Landscaping and Grounds Maintenance

- Plant shelterbelts of trees around the borders of parking lots and near buildings. Shade trees will decrease energy use by the facilities and lessen heat island effects of large parking lots. Choose shrubs and trees that provide food and cover for wildlife, with preference for native species. Shrubs should be spaced about 4 to 6 feet apart; and trees approximately 10 feet apart. To create shelterbelts, plant several rows of larger trees, smaller trees, and shrubs with rows about 15 feet apart.
- Where possible and when installing new landscaping, select native plants suitable to the site. Native plants suitable for planting in Florida are available at http://www.fnps.org/plants and additional guidance is available in *The Florida Yards & Neighborhoods Handbook* (IFAS Extension 2015) floridayards.org/landscape/The_Florida_Yards_and_Neighborhoods_Handbook_Web.pdf.
- Follow the nine Florida-Friendly Landscaping Principles (http://fyn.ifas.ufl.edu/): (1) Right Plant, Right Place, (2) Water Efficiently, (3) Fertilize Appropriately, (4) Mulch, (5) Attract Wildlife, (6) Manage Yard Pests Responsibly, (7) Recycle, (8) Reduce Storm Water Runoff, and (9) Protect the Waterfront.
- Maintain the nature trail in the Cantonment Area to minimize erosion and vegetation encroachment and provide for non-vehicular access between different areas.
- Maintain designated conservation areas to protect wetlands, endangered species, and cultural resources.

4.5 Wildland Fire Management

GOAL FI: Implement a wildland fire program that minimizes safety concerns and wildfire risk, enhances the military mission, benefits rare species, protects cultural resources, and maximizes habitat management and ecological benefits.

OBJECTIVE FI1: Implement all protocols and requirements of the IWFMP.

OBJECTIVE FI2: Ensure no deaths, injuries, property losses, or road closures occur because of wildland smoke or fire, including off-post property damage (from IWFMP).

OBJECTIVE FI3: Maintain or improve quality of training lands (from IWFMP).

OBJECTIVE FI4: Manage fuel loads by implementing dormant season burns in units with high fuel loads and conducting maintenance burns during the growing season (from IWFMP).

OBJECTIVE FI5: Coordinate and cooperate with other federal, state, local agencies, and directorates within the installation as needed (from IWFMP).

OBJECTIVE FI6: Use wildland fire to manage habitat for rare species, in particular the RCW.

OBJECTIVE FI7: Maintain and restore habitat using appropriate fire return intervals and growing season prescribed fire.

Primary Regulatory Drivers

- SAIA
- AR 200-1
- Florida Prescribed Burning Act (Section 590.125 of F.S.)
- FAC 5I-2 (Open Burning)

Fire is a natural process in Florida's vegetative communities and has been a major factor in ecosystem and vegetation development at CBJTC. Recurrent wildland fire is important for maintaining the majority of Florida's habitats including the longleaf pine/wiregrass, sandhill, flatwood, and scrub habitats on CBJTC, which are critical for many rare species. The IWFMP (FLNG 2011a) is the primary planning tool for the wildland fire program and presents the program in detail. This section of the INRMP is meant to integrate with the rest of the natural resources program and provide a summary of the wildland fire program, particularly fire ecology and prescribed fires, and associated guidelines.

The IWFMP lays out specific guidance, procedures, and protocols for the prevention, detection, and suppression of wildfires and the planning and operating procedures involved with prescribed burning on CBJTC. Its purpose is to convey the methods and protocols necessary to minimize wildfire frequency, severity, and size, while conducting beneficial prescribed burns and supporting the military mission. The IWFMP also defines the responsibilities of all offices, departments, and agencies involved. FFWCC plays a significant role in the wildland fire program, as well as managing wildlife, on CBJTC. A copy of CBJTC IWFMP is included as **Appendix G**.

Wildfires are typically controlled across most of CBJTC, although they are allowed to burn through the Impact Area due to the presence of UXO. Prescribed fires are used for fuel reduction to prevent intense wildfires, reduce hardwood competition, enhance wildlife forage, and promote native rare species habitat.

4.5.1 Fire Ecology

Approximately 63,200 acres or 85 percent of CBJTC is covered by natural vegetation communities and other land cover types (e.g., pine plantations) that require frequent prescribed fire to maintain vegetation composition and structure and to reduce fuel loads for protection against large, intense wildfires (see **Table 13**). Additionally, 655 acres or 1 percent of CBJTC requires rare to occasional prescribed fire. Historically, most wildfires occurred during the dry summer months, usually from May to early July. The most common natural source of ignition was lightning from summer thunderstorms.

Table 13. Fire Intervals for Vegetation Communities Requiring Regular Fire within CBJTC

Community / Land Cover Type	Natural Fire Frequency	Acres	Percent Cover
Sandhill	Frequent fire (1 to 3 years)	14,997	20
Mesic Flatwoods	Frequent fire (2 to 4 years)	8,134	11
Upland Mixed Woodland	Variable fire interval (2 to 20 years).	9,418	13
Dry Prairie	Frequent fire (1 to 3 years)	2,041	3
Scrub	Rare to occasional fire (5 to 100 years)	340	0.5
Wet Flatwoods	Frequent fire (2 to 4 years) for grassy wet flatwoods and 5 to 10 years for shrubby wet flatwoods	10,480	14
Wet Prairie and Bog	Frequent fire (2 to 3 years)	1,175	1.5
Tree Plantations	Frequent fire (3 to 5 years)	85	22
	Total Land Requiring Regular Fire	**63,207**	**85**
Note: CBJTC GIS Boundary equals approximately 73,764.			
Source: FNAI 2010a, 2010b			

Approximately 64,000 acres of CBJTC require prescribed fire at varying intervals. However, the majority of CBJTC, which includes established pine stands, sandhill, and flatwoods, should be burned on 3 to 5-year fire return intervals. To maintain this schedule, 11,000 to 18,000 acres must be burned annually, preferably in large blocks for efficiency. This is accomplished by burning with aerial ignition and including 8 to 10 personnel from multiple CBJTC offices and FFWCC. This burning schedule has been frequently disrupted by drought conditions or by intense hurricane activity. In general, fuel models present on CBJTC include (see **Appendix G** for fuel model descriptions):

- Fuel Model 1 – short grass--- prairie or savanna
- Fuel Model 2 - grass under timber—grass with some small shrub component with pine overstory
- Fuel Model 3 – high grass—cogongrass
- Fuel Model 4 - heavy rough—high shrub with dead limb wood, scrub
- Fuel Model 6 – brush with slash --- hardwood shrub with pine slash residues
- Fuel Model 7 - southern rough—Palmetto/gallberry under pine overstory

- Fuel Model 9 - blowy leaf—loose hardwood litter under closed canopy
- Fuel Model 10 – light logging slash --- timber decks

Fuel levels were estimated during the 2009 growing season. A fuel level map is provided in Figure 7 of the IWFMP (see **Appendix G**).

4.5.2 Wildland Fire History on CBJTC

Historically, the only fire management on CBJTC was fire suppression with little to no prescribed fire. As a result, a large build-up of fuels occurred over much of CBJTC. This fuel build-up still poses a problem for the wildland fire program on CBJTC. Heavy fuels not only make prescribed fires more difficult, but create much more dangerous wildfires when they inevitably occur. When CBJTC was formed and the military began to train, human fires became another common source of wildfire ignition. The military uses many pyrotechnic devices that can be ignition sources. CBJTC is a year-round training facility and wildfire starts can occur during the entire year. Annual Training events have a marked increase in troop activity, typically in the summer, and therefore a marked increase in military started wildfires. Beginning in the early 1990s, a prescribed burn program was implemented with the goal of returning the historic fire return interval to CBJTC. While the initial efforts focused on dormant season burns to reduce fuel loads, growing season burns have become a larger part of the program. In the last ten years, there are typically 5,500 to 14,000 acres burned each year.

4.5.3 Prescribed Fires

The single most important tool for managing the natural resources at CBJTC is prescribed fire. Most CBJTC habitats need regular prescribed burning to maintain forest composition and structure, and to reduce fuel loads for protection against large, intense wildfires. Prescribed fire is also essential for RCW management. The objective of the fire management program is to eventually conduct most prescribed burning during the growing season, except where winter burns may meet other objectives. Winter burns will be necessary initially to reduce thick understories and high fuel loads, and to meet annual burning targets. Growing season burns will be favored on sites where understory fuel loads are low enough to avoid intense fires and mortality in the mature pines. Objectives for prescribed fires include:

- Ecological Management
- Fuel Reduction for Wildfire Protection
- Maintenance and Restoration of Fire Dependent Species
- Control of Forest Diseases and Insects
- Site Preparation for Reforestation
- Piles (Logging Debris)
- Improvement of Wildlife Habitat
- Training
- Research
- Enhance Appearance
- Improve Access for Military
- Military (Ranges)

The first priority for prescribed fire is all composite pine stands, natural or plantation, which fall within RCW foraging habitat. The primary burning objectives are reduction of understory vegetation and the promotion of diverse herbaceous groundcover. In stands that have experienced a recent fire, growing season burns will be favored once dense palmetto and other shrubby vegetation is maintained at low densities and less than 3 feet in height. Burns in late spring and early summer also serve to encourage desirable groundcover

vegetation such as wiregrass. Burning in RCW areas will require special protection of cavity trees by mowing around and/or raking fuels away from each tree and igniting around the cavity tree prior to the fire's arrival. Thus, causing the fire to burn away from each tree when it is low intensity, rather than burning to the tree with high intensity and igniting the pitch on the side of the trees.

The second priority for understory burning will be those stands that were thinned during the previous year. The primary objective is to reduce brush that sprouts after thinning and residual slash left from the thinning.

Burning will generally be prescribed for large blocks that contain several complete or partial composite stands rather than for single composite stands. Although most blocks will be ignited with conventional drip torches (hand-held or mounted on 4-wheel drive vehicles), very large blocks may also be burned with helicopter ignition using delayed aerial ignition devices ("ping-pong" balls).

There are 49 burn units on CBJTC designed to facilitate burn planning, mapping, and record keeping. Additional consideration was given to delineating burn units according to fuel conditions, natural community types, existing roads, and natural firebreaks (mostly creeks and bayheads). To support the burn units, each forestry stand was assigned a subjective burn priority ranging from one to four, with one being the most urgent, with a target of a four-year rotation among units. Overall, 60 composite stands are ranked as Priority 1 stands; 82 are Priority 2 stands; 44 are Priority 3 stands; and 23 are Priority 4 stands.

Roads, natural barriers such as streams, and existing fire lines are used as primary fire lines, but new lines are also plowed where necessary to protect other stands or features, or to enhance burning logistics. Although plows may be necessary to initially create new lines, all plowed fire lines are maintained with discs rather than plows to avoid disrupting any natural drainage patterns. For prescribed fire, all considerations are made to use existing firebreaks. During a wildfire event, there are no restrictions of fire line placement. Placement is based upon urgency of suppression and actual fire behavior. If a new fire line is created it will be rehabilitated in a timely manner.

4.5.4 Smoke Management

Smoke is a significant constraint to the prescribed burn program on CBJTC. The greatest negative impact caused by prescribed burning is the potential for acute smoke impacts to the military and public, as well as regional impacts caused by releasing too much smoke into the airshed on a given day. Large quantities of smoke can cause health issues or visibility issues on major roads. State or county highways run along the edge of CBJTC on the east and south sides and are a major concern when affected by smoke created from a prescribed burn. Refer to Figure 3 of the IWFMP for smoke management concern areas within the vicinity of CBJTC (see **Appendix G**).

4.5.5 Management Guidelines

The following general wildland fire management guidelines should be implemented at CBJTC:

- Train at least four CBJTC personnel in habitat management prescribed fire techniques and maintain a sufficient crew of trained personnel.
- Allow patchiness (allow unburned areas to remain unburned) within burn units.

- Conduct prescribed burns during the growing season under low-humidity conditions.
- Coordinate the yearly aerial burn schedule and training activities with FFWCC in advance of each burn season.
- Conduct prescribed fires normally during the growing season and at least once every three years as weather, fuel conditions, and training area access allow. Missed burns will be scheduled in the growing season as soon as possible, but may require a return to dormant season burning until fuels are sufficiently reduced.
- RCW clusters are clearly marked by double white bands on each cavity tree and a plan should always be in place for their protection before a cluster can be burned. Flame length and fire intensity should be closely managed and monitored in the area around each cavity tree.
- When reasonable, allow wildfires to burn-out to existing lines
- The Impact Area sustains approximately one hundred wildfires a year. Several areas within the Impact Area are deemed too dangerous for direct suppression and therefore indirect attack and/or limited-action burns are used to contain these wildfires. When reasonable, prescribed fire is applied to “box-in” areas too dangerous for human entry to pre-contain potential wildfires.

4.6 Fish and Wildlife Management

GOAL FW: Maintain fish and wildlife populations while minimizing potential impacts to the military mission.

OBJECTIVE FW1: Manage wildlife using a systematic approach that includes inventory, monitoring, management, and assessment.

OBJECTIVE FW2: Maintain populations of wildlife by providing healthy, diverse habitat types and corridors for movement between those habitats.

OBJECTIVE FW3: Maintain a sustainable wildlife harvest program using adaptive, ecosystem management.

OBJECTIVE FW4: Maintain fish species and suitable habitat in appropriate lakes.

OBJECTIVE FW5: Minimize wildlife-related health risks, safety risks, and environmental damage.

Fish and wildlife management at CBJTC is focused on maintaining and restoring natural habitats favorable for indigenous fish and wildlife in a manner consistent with the military mission and all applicable laws and regulations. There is sufficient habitat to support a healthy diversity of wildlife on CBJTC. The vegetation communities present on CBJTC and the active prescribed fire program support a high diversity of native wildlife and rare species (see **Section 4.7**). For a detailed summary of wildlife species and rare species, refer to **Sections**

Primary Regulatory Drivers

- SAIA
- Migratory Bird Treaty Act
- AR 200-1
- FAC 68A (Freshwater Fish and Wildlife)
- Chapter 379, F.S. (Fish and Wildlife Conservation)

2.3.3 and **2.3.4**, respectively. This section of the INRMP provides a summary of the hunting and fishing program and wildlife and game species management.

4.6.1 Migratory Bird Birds

The Migratory Bird Treaty Act (MBTA) prohibits, unless permitted by regulations, the pursuit, hunting, take, capture, killing or attempting to take, capture, kill, or possess any migratory bird included in the Migratory Bird Treaty, including any part, nest, or egg of any such bird (16 USC §703). The DoD has a MOU with USFWS pursuant to EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*), which outlines a collaborative approach to promote the conservation of migratory bird populations. This MOU specifically pertains to natural resource management activities, including, but not limited to, habitat management, erosion control, forestry activities, invasive weed management, and prescribed burning. It also pertains to installation support functions, operation of industrial activities, construction and demolition activities, and hazardous waste cleanup. In February 2007, USFWS finalized regulations for issuing incidental take permits to the DoD for military readiness purposes. If any of the Armed Forces determine that a proposed or an ongoing military readiness activity may result in a significant adverse effect on a population of migratory bird species, then they must confer and cooperate with USFWS to develop appropriate and reasonable conservation measures to minimize or mitigate identified significant adverse effects (50 CFR Part 21).

DoD's policy is to promote and support a partnership role in protection and conservation of migratory birds and their habitat by protecting vital habitat, enhancing biodiversity, and maintaining healthy and productive natural systems on DoD lands consistent with the military mission. The Partners in Flight program is an umbrella network of which DoD's bird conservation program is a vital part. DoD works with the National Fish and Wildlife Foundation to develop cooperative programs and projects with other Federal, State, and non-governmental organizations. FFWCC is Florida's lead agency for the Partners in Flight Program. Migratory birds include species with at least some populations breeding in the continental United States and/or Canada, for example songbirds, shorebirds, waterbirds, and waterfowl. Attention has centered on migrants, since this group is experiencing steep rates of population decline. However, decreasing populations have also been observed in resident bird species, which do not migrate, and temperate-zone migrants, which only migrate within North America.

Camp Blanding includes several of the DoD Mission-Sensitive Species as residents or migrants, these species are managed under general policy and included in the CCAA.

DoD Mission-Sensitive Species relevant to Blanding:

Year-round residents:
- Bachman's Sparrow
- Northern Bobwhite
- Southeastern American Kestrel
- Least Tern Atlantic Coast Population

Winter (non-breeding) residents:
- Henslow's Sparrow
- Rusty Blackbird

Migrant:
- Golden-winged Warbler

4.6.2 Hunting and Fishing at CBJTC and Public Access

Camp Blanding WMA

FFWCC manages approximately four million acres of public hunting land throughout the state of Florida. In 1956, FFWCC entered into an agreement with FDMA, which established Camp Blanding WMA. This MOA was renewed in 2006 (see **Appendix I**). As described in **Section 3.6**, approximately 56,200 acres of CBJTC is managed by FFWCC as Camp Blanding WMA. FFWCC receives all revenues obtained from permits issued to hunt and fish on Camp Blanding WMA. In exchange, FFWCC provides assistance to CBJTC with prescribed burning activities, management of public hunts, operating hunter check stations to monitor harvests and collect biological data, assistance with rare species management, removal of litter from hunting areas, technical assistance regarding fish and wildlife, and hunting and fishing law enforcement.

Annually, FFWCC provides CBJTC with actual hunting dates and quotas for that year and projected hunting dates for a five-year period. Range Control works closely with FFWCC to try to accommodate these schedules. However, areas are subject to closure for military training activities at any time if deemed necessary to meet the military mission.

Each year, hunting recommendations for the area are made based on population levels and trends, habitat indices, and past harvests. Camp Blanding WMA regulations summary and map are updated annually by FFWCC. The hunting season regulations summary and area map brochure for 1 July 2012 to 30 June 2013 is available at http://myfwc.com/hunting/wma-brochures/nc/camp-blanding/. The permit, license and stamp requirements; hunting seasons; permit schedules; and general hunting and fishing regulations for CBJTC are the same as established for the State of Florida and WMAs generally. The Wildlife Code of the State of Florida (FAC 68A) is the final authority on hunting and fishing laws.Hunting areas are designated within Camp Blanding WMA with different allowed activities and regulations: archery-only, still hunt area 1 and 2, and a dog hunt area. All hunting is by quota permits only (no cost) and offers big game, small game, and waterfowl hunting. Trapping is allowed in the still hunt areas. Quota permits are available by entering a FFWCC lottery in June for certain types of hunts (e.g., turkey hunts), while other quota permits are available on a first-come first serve basis at the designated check station on a daily basis. All quota permits are no cost. Hunter demand is measured by the number of quota hunt permits issued for the first four days and the second five days of the general gun season.

Quota Permits for Camp Blanding WMA for Hunting Seasons

Quota permits generated through FFWCC lottery

- Muzzleloading Gun – 200 for each of 2 hunts.
- Supervised Youth – 40 (no exemptions) for each of 2 hunts.
- General Gun Still Area 1 (first 9 days) – 200 for each of 2 hunts.
- General Gun Still Area 2 (first 9 days) – 200 for each of 2 hunts.
- General Gun Dog – 320 for each of 2 hunts.
- Youth Turkey – 35 (no exemptions).
- Spring Turkey – 35 for each of 2 hunts.
- Hog Dog Hunt – 60 for each of 2 hunts.

Daily quota permits offered on a first-come, first serve basis at the WMA check station

- Archery-only Area – 150, each day of the season.
- General Gun Still Area 1 (after first 9 days) – 200.
- General Gun Still Area 2 (after first 9 days) – 200.

Hunter Check Stations are open and staffed during all deer and turkey hunts. Check station hours are one hour before sunrise to one hour after sunset during the archery, supervised youth, muzzle loading gun and general gun seasons. During spring turkey season the check station is open at 5 a.m. and

closes at 1 p.m. The purpose of check stations at CBJTC is to collect biological data from harvested animals (weights, other measurements, etc.), record hunter pressure, distribute information such as hunt maps and brochures, and check hunters for proper permits upon entering the WMA. Because hunters must enter through designated gates, an absolute count of hunters using the area and game harvested is obtained. Check station operators do not have any law enforcement powers or duties.

The following public access requirements are in place when Camp Blanding WMA is open:

- When the area is open, hunting, fishing, wildlife viewing, and hiking are allowed. For purposes other than hunting, dogs are prohibited.
- Scouting is prohibited prior to open hunting seasons.
- Public access is prohibited in the artillery impact area and areas not open for hunting.
- Camping and the use of ATVs are prohibited.
- Vehicles may be operated only on named or numbered roads and only during periods open for hunting.
- Parked vehicles may not obstruct a road, gate, or fire line.
- No motor vehicle shall be operated on any part of any WMA that has been designated as closed to vehicular traffic.
- A marked footpath called the Florida Trail traverses the area. Persons accessing this trail must complete and return a no-cost daily trail permit at a trail entrance kiosk upon entering and leaving the trail (see **Section 3.7**).
- Unless exempted, all hunters on this wildlife management area must have the following in their possession and display them upon request: 1) Hunting License, 2) WMA Permit, and 3) Quota Hunt Permit.

Camp Blanding FMA

Under a MOA between FFWCC and FDMA, Lowry and Magnolia lakes are open to the public for fishing (see **Appendix I**). Magnolia and Lowry Lakes are open on Sundays, Mondays, and all days that Still Hunt Area 2 is open for hunting from 30 minutes before sunrise to 30 minutes after sunset, except when closed for military training activities. Access to Magnolia and Lowry Lakes for fishing only shall be on Treat Road only, when allowed by CBJTC Range Control. A valid fishing license stamp is required for state residents between the ages of 16 and 65 when fishing on CBJTC. See FFWCC's current Freshwater Sport Fishing Guide and Regulations Summary at www.fwc.com for rules concerning exemptions and non-resident licenses, bag limits, and specific fish management area regulations.

The following public access requirements are in place when Camp Blanding FMA is open:

- All restrictions noted above for the WMA apply.
- All anglers will be required to check into and out of the area at a manned check station.
- Boat launching is permitted only at designated areas.

- Frogging is prohibited.
- All watercraft shall be operated at idle speed only.

Camp Blanding Rod and Gun Club

Camp Blanding Rod and Gun Club, Inc. (Club) in coordination with CBJTC Range Control operates and maintains 21 hunting areas on CBJTC that are not included in Camp Blanding WMA. The Club is responsible for posting signs on all hunting area boundaries. All areas are open to hunting by Honorary Members and Registered Paying Members with spouses and immediate family members as identified in the current By-laws of the Club. The Club is also approved for fishing in the following areas: Blue Pond, Perch Pond, OP Pond, Capps Pond, and Long Pond. The Club ensures that hunting, fishing, and plot preparation only occur during those times as published in the MOA and during prescribed seasons as published by FFWCC.

4.6.3 Wildlife Habitat Management

FFWCC is an important cooperating partner for wildlife management primarily as a result of the MOA that governs Camp Blanding WMA. FFWCC produces an annual report detailing wildlife management activities on CBJTC. FFWCC biologists: (1) develop, maintain, and analyze databases; (2) monitor selected species; (3) conduct and/or recommend habitat management activities that preserve or enhance the quality of these lands; and (4) recommend regulations to ensure perpetuation of game species. CBJTC personnel coordinate all wildlife management activities with FFWCC personnel.

FFWCC Annual Report Data / Information
(see Annual Report for detailed information)

- A summary of rule changes from the establishment of the WMA in 1956 to the present.
- Annual hunting season summary including areas hunted within the installation, types of hunts, and harvest data.
- Wildland fire support summary includes acres burned by method and purpose (e.g., aerial burns, RCW management).
- Wildlife management support summary includes the number and type of nest boxes, RCW artificial inserts, and bat houses developed, cleaned and maintained; the acreage of wildlife openings planted in the spring and fall; and other assistance provided throughout the year (e.g., assistance with species surveys or studies on CBJTC).

Principal management tools used by FFWCC and CBJTC-ED are game and wildlife regulations and habitat enhancement. Annual surveys are conducted for deer, turkey, and RCWs. Formal bald eagle surveys are conducted by FFWCC periodically. Informal bald eagle surveys are conducted during prescribed burning aerial ignitions by CBJTC-ED staff when conditions allow. Habitat management includes prescribed fires, maintenance of wildlife openings, and placement of nesting structures. An RCW survey is conducted annually to determine the activity of each cluster, each cavity tree, and to identify the nest trees.

Wildlife management involves manipulating various aspects of an ecosystem to benefit chosen wildlife species. Management of these habitats is focused to benefit indigenous species, particularly threatened and endangered species, and game species. FLARNG will continue to manage the wildlife and its habitats at CBJTC, in conjunction with FFWCC, by implementing the strategies listed below.

- Leave snags, den trees, and fallen logs undisturbed unless they are a safety hazard. Snags are standing dead trees, while den trees are live trees with cavities in them.
- Protect large, unfragmented quality habitat as territory for viable wildlife populations. Configuration of protected habitats should conform to shapes that minimize edge-to-area ratios. Circular shapes are preferable in achieving this goal. Narrow, linear, or small-acreage habitats should be avoided if possible.
- Use prescribed fire to restore sandhill, flatwoods, and other natural and rare communities dependent on a regular fire interval for indigenous and rare species (see **Sections 4.4 and 4.5**).
- Allow some unburned areas to remain unburned. This increases diversity and benefits terrestrial carnivores (bobcat, fox, and black bear).
- Minimize continually burning areas in the dormant season. Frequent dormant season burns can reduce valuable cover. Growing season burns provide the best benefits for terrestrial carnivores (bobcat, fox, and black bear) that use dense brush (palmetto) as den sites, foraging, and rest areas (Maehr et al. 2001)
- Maintain corridors between wetlands, lakes, and other waterbodies to provide for wildlife movement between areas.
- Minimize habitat fragmentation by minimizing land clearing, new road construction, and expansion of firebreaks and plow lines.
- Minimize the amount of herbicide used for invasive species control, particularly in or around surface waters and wetlands, by using mechanical methods to the extent possible avoiding impacts to fish and wildlife habitat.
- Limit mowing only to areas where it is necessary to implement the training mission.
- Conduct periodic surveys to assess native fauna populations.
- Maintain wildlife openings. FFWCC manages food plots throughout the installation; some of these openings were created naturally as a result of prescribed fire activities. FFWCC will sometimes plant native vegetation for wildlife in these openings after a burn. The military mission also generates natural wildlife openings through regular maintenance of open areas for training (e.g., LZs, AFPs, and the DZ).
- Clean and maintain nesting wood duck, eastern blue bird, and southeast American kestrel, boxes prior to the nesting season and monitor reproductive success periodically.
- Ensure problematic organisms are not transferred between waterbodies by research and management activities.

Additionally, a Candidate Conservation Agreement with Assurances with the USFWS and FFWCC for Multiple At-Risk Species in North Florida (CCAA) on portions of CBJTC that support natural habitat for candidate and at-risk species' and are not at risk of future development or intensive military operations. Through this agreement Camp Blanding monitors at risk species and their habitat annually (**Appendices I and S**).

Florida Black Bear

The Florida Black Bear was listed as a State-designated Threatened Species in 1974 because of low population numbers and restricted range. Due to the conservation efforts of state and federal agencies, local governments, non-profit groups, residents, and businesses, the Florida black bear has recovered and was officially removed from the list of State-designated Threatened Species in 2012. Currently the Florida Black Bear is managed by the FFWCC as a game species and protected through various Florida rules, including the Bear Conservation Rule (F.A.C. 68A-4.009).

Black bears in Florida den in January and February, typically in wetland edges that haven't burned in at least ten years. Camp Blanding takes precautions against generating negative impacts to the species regarding denning and forage availability. While the installation's fire management objectives do not specifically seek to leave zones unburned for bears and other species that require the heavy understory and high vegetation of ten-year rough, the physical and operational realities of the program result in no shortage of these types of areas. Additionally, Northcentral Florida's native palmetto fruits in early autumn and many species, including bears, rely on this food source. In recent years, the market in Florida for palmetto berries has been vibrant enough to warrant commercial harvesting. Recognizing the importance of palmetto berries to the local fauna, Camp Blanding conducts its harvest in such a way as to minimize negative impacts that could result from such a harvest. The full process is articulated in the Forest Resource Management Plan (**Appendix F**).

4.6.4 Game Species Management

As discussed above, FFWCC is an important cooperating partner for wildlife management, particularly for games species management. FFWCC manages all quota hunts and fishing within Magnolia and Lowry lakes at CBJTC, and sets bag limits. Each year, hunting recommendations for the area are made based on population levels and trends, habitat indices, and past harvests. As a result, much of the data and management activities summarized here are the result of efforts by FFWCC personnel.

CBJTC is a major source of recreational use for hunting and fishing in north central Florida (see **Section 4.6.2**). Hunting alone attracts 10,000 to 13,000 man-days of use annually. These hunts determine population densities for the game species and provide outdoor recreation opportunities for Florida citizens and military personnel. A number of legal game mammals are hunted at CBJTC, including white-tailed deer, turkey, bobcat (*Lynx rufus*), and river otter (*Lutra canadensis*); these species have relatively low bag limits. Gray squirrel, northern bobwhite (*Colinus virginanus)*, and rabbits have moderate bag limits. Feral hogs, Virginia opossum (*Didelphis virginianus*), raccoon (*Procyon lotor*), beaver (*Castor candensis*), coyote (*Canis latrans*), nine-banded armadillo (*Dasypus novemcinctus*), striped skunk (*Mephitis mephitis*), and nutria (*Myocastor coypus*) may be taken during the general gun, archery, and muzzle-loading gun seasons and have no bag limits. Migratory game birds follow the state bag limits and include rails, common moorhen, mourning dove, white-winged dove (*Zenaida asiatica*), snipe, duck, geese, coot, woodcock, and crows. Fish occur primarily in Kingsley, Lowry, and Magnolia Lakes and FMA and state bag limits for game fish apply (Camp Blanding WMA Brochure contains current harvest limits and guidelines). See FWC's Camp Blanding WMA Annual Report for harvest data.

Deer are the preferred game species, although turkeys are also popular. Squirrel and hog hunting pressure is moderate. Quail were once harvested in large numbers, but are now seldom taken. Feral hogs are a non-

native invasive wildlife species that can cause tremendous damage, especially in riparian and wetlands areas. For the long-term health of CBJTC, it is crucial to encourage feral hog harvesting.

White-tailed deer and wild turkey are monitored annually by FFWCC (see below). Annual quail call surveys were previously conducted during May. However, due to declining habitat quality caused by lack of prescribed burning for many years, the quail population dipped to extremely low levels and FFWCC ceased conducting these surveys. Hunter interest has paralleled the declining population because of poor success rates in finding birds. The quail population on CBJTC does seem to be improving but there are no recent estimates of population size. Habitat has notably improved and hunter success will provide one indicator of population response. A brief discussion on deer, turkey, and feral hog population monitoring at CBJTC is provided below.

White-Tailed Deer

The deer population is monitored by track counts and distance sampling by spotlight. These methods provide a population index. Data is also collected from hunter-harvested deer that provides age structure, mean weights, and antler parameters. Track counts are conducted on 11 miles of unpaved transect roads. Individual deer crossings are counted 12-15 hours following either dragging the road or a heavy rain. The population index typically ranges from 20 to 50 acres per deer. FFWCC established the requirement for a legal buck in the still hunt areas to have at least one antler with three or more points in 2004, in order to improve the overall quality of harvested buck deer. In the dog hunt area, a legal buck must have at least one antler measuring no less than 5 inches.

The existing hardwood forest provides adequate forage for quality white-tailed deer during years of good mast production. Forage plants available in hardwood and pine forests, combined with grasslands and agricultural food plot residues, adequately meet the needs of the present population. Wildlife habitat improvements resulting from planned forest management activities such as prescribed burning, timber stand improvement operations, and timber harvesting operations will upgrade the quality and quantity of forage that is now present.

Hunting on CBJTC mimics the effects that natural predators have on deer populations. Large predators, such as panthers, bobcats, and wolves preyed on deer and other game in pre-settlement times and are no longer as abundant in Florida. Without predation, deer populations may increase to the point where they are damaging habitat for other species in their search for food. The optimum carrying capacity for deer on CBJTC is approximately 1 deer per 20-50 acres based on many years of monitoring data.

Turkey

Surveys have been conducted annually in late summer along transect routes, with approximately 23 mobile bait stations since 1989. Bait stations are located in good turkey habitat and are a minimum of one mile apart. Stations are pre-baited for one week and then surveyed daily, by vehicle, for two weeks. The average number of turkeys per bait station is the index used for annual comparisons of the population. The index has ranged from 2.1 to 10.4 turkeys at a bait station per visit. Camp Blanding WMA has one of the highest turkey densities of all Florida WMAs.

The existing hardwood forest adequately meets the hard mast requirements for turkeys. The combined hardwood and pine forests adequately meet roosting requirements. Wildlife habitat improvements from planned forest management activities such as prescribed burning and thinning operations in pine plantations will increase the present brood range by providing a variety of age classes in the herbaceous cover. This herbaceous cover will attract a variety of insects that are an important source of protein for young turkey poults. The management of grass openings for a variety of successional stages of vegetation will increase the availability of insect and herbaceous food as well as nesting cover.

Feral hogs

Feral hog harvest tends to parallel hog population trends; and therefore, may fluctuate from year to year. Hog densities have varied within CBJTC from moderate to low levels. There are no bag or size limits. Allowing dog hunting generally on CBJTC likely helps reduce damage from feral hogs even if they do not remove a large number of hogs; feral hogs generally respond to the presence of hunting dogs by moving around more and causing less damage in one place.

4.6.5 Nuisance Wildlife

As discussed above, feral hog harvesting is crucial to the long-term health of CBJTC as they have the ability to cause large-scale damage to wildlife habitat. Feral hogs are not currently a major problem, but should be closely monitored particularly in the northern portion of the installation where wetlands and other riparian areas are more abundant.

Bats have recently become a problem as they are roosting in buildings and the south MOUT site. In hopes of relocating the bats, FLARNG has installed bat houses. However, it is unclear at this time if this is helping or if this is creating additional bat habitat. FLARNG will continue to monitor this situation. Further efforts may be necessary to minimize negative impacts from bats within buildings and other training infrastructure.

Nuisance wildlife problems will be evaluated in conjunction with USFWS and FFWCC personnel, as appropriate. Any solutions to nuisance wildlife problems will follow the IPMP (see **Section 4.8**; **Appendix Q**).

Diseases affecting fish and wildlife may occur on the installation. As outlined in AR 200-1, installation natural resources personnel will consult with appropriate Army Veterinary Corps personnel and, if appropriate, USFWS and FFWCC regarding large-scale fish and wildlife deaths and unnatural behavior occurring on the installation.

4.7 Threatened and Endangered Species Management

GOAL TE: Manage rare species using an ecosystem approach, while maintaining the military mission at CBJTC

OBJECTIVE TE1: Conduct flora and fauna surveys as needed particularly for federal and state special status species where potential habitat exists.

OBJECTIVE TE2: Maintain diversity of habitat patches to provide a variety of disturbance regimes and habitat types to support a variety of rare species.

OBJECTIVE TE3: Use prescribed fire to maintain natural vegetation communities at CBJTC as numerous rare species at CBJTC benefit from a regular fire disturbance interval.

OBJECTIVE TE4: Maintain populations of RCW, eastern indigo snake, and other rare species by managing for large tracts of forest.

OBJECTIVE TE5: Sustain the RCW population at 25 potential breeding groups (PBGs) or more to avoid re-implementation of all military training restrictions.

OBJECTIVE TE6: Maintain populations of Florida scrub-jay, Curtiss' milkweed, little ladies' tresses, and other rare species by managing scrub habitat.

OBJECTIVE TE7: Maintain populations of Florida sandhill crane, little blue heron, Florida black bear, black creek crayfish, bald eagle, and other rare species by protecting riparian and wetland habitats.

This section presents information about the management of threatened, endangered, and other rare species that are documented on CBJTC. FLARNG is required to manage federally and state listed threatened and endangered species. Failure to protect federally listed species could lead to an ESA violation, which could negatively impact training land availability. A complete summary of rare species is provided in **Section 2.3.4**.

Primary Regulatory Drivers

- Endangered Species Act
- Bald and Golden Eagle Protection Act
- Florida Endangered and Threatened Species Act (Chapter 379.2291, F.S.)
- FAC 68A-27.003 and 68A-27.005
- FAC 5B-40

In accordance with AR 200-1 and DoDI 4715.03, FLARNG has conducted surveys for federally threatened and endangered species, federal candidate species, and state listed species at CBJTC (e.g. FLMNH 1996a, FLMNH 1996b, Bio-tech 2009). Of the 113 listed animal species and 561 listed plant species in Florida, 34 species protected under the ESA and/or Florida law are known to occur at CBJTC and eight are considered "high priority" management species. Species include 1 amphibian, 7 birds, no mammals, 3 reptiles, and 25 plants. The bald eagle is no longer federally or state listed; however, protections under the Bald and Golden Eagle Act are still in effect. Historically bald eagle nests have been found in several locations on Camp Blanding, though at present none are active.

No federally designated critical habitat occurs currently within CBJTC. The 2004 amendments to the ESA included provisions to exclude critical habitat designations on DoD lands. Section 4(a)(3)(B) is not discretionary and mandates that the Secretary of Interior exclude designating critical habitat on "any lands or other geographical areas owned or controlled by the DoD, or designated for its use, that are subject to an INRMP prepared under section 101 of the SAIA, if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation." Installations should request exclusion from critical habitat initially through ARNG G-9 for review and concurrence and then to the appropriate USFWS office.

Camp Blanding maintains a CCAA with US and Florida wildlife regulators that covers all species not currently listed as imperiled, this includes all federal and state candidate species. As the CCAA includes all non-listed species found within Camp Blanding, the only way a species can be "added" to the document is if it becomes de-listed by either or both the USFWS and FWC.

This section of the INRMP focuses on the management requirements of rare species identified as 'high priority' management species on CBJTC in **Tables 9** and **10** (see **Section 2.3.4**). Species-specific management plans and fact sheets for several of the listed species, when available, are included in **Appendix E** for additional information. Furthermore, a brief section on managing nonvascular plants (bryophytes and lichens) is provided below due to several rare and noteworthy species occurring on CBJTC and their dependence on a variety of habitats (see **Section 2.3.2**).

High priority was given to federally listed species known to occur at CBJTC. Florida panthers were not documented directly or indirectly during the most recent survey (Bio-tech 2009). According to USFWS, a single wild population in south Florida of 100-160 adult panthers is all that remains of this species, which had previously been found in most of the southeastern US (Godsea 2020). High priority management species include:

- federally endangered RCW
- federally endangered wood stork
- federally endangered Chapman's rhododendron
- federally threatened Florida scrub-jay
- federally threatened Eastern indigo snake
- federally threatened (due to similarity of appearance) American alligator
- federal candidate and state threatened gopher tortoise

4.7.1 Federally Endangered Species

Red-cockaded Woodpecker: RCWs occur in association with mature, open-canopied pine forests dominated by longleaf pine, slash pine, loblolly pine (*Pinus taeda*), shortleaf pine (*Pinus echinata*), and occasionally other pine species. RCWs construct nest and roost cavities in live, old-growth pine trees, often infected with red-heart fungus, which enables the birds to excavate the cavities with greater ease. Additionally, pine stands and pine trees are the preferred foraging habitat and substrate. As of the end of the 2020 breeding season, CBJTC had 36 active RCW clusters and 27 potential breeding groups within the

installation boundary. RCW clusters are found north and east of the Cantonment Area. See **Map 8** for 2020 RCW cluster locations and **Appendix D** for more information on RCW populations at CBJTC.

CBJTC has been designated as an "essential support" population in the USFWS (2003) *RCW Recovery Plan, 2nd Revision*. The future expansion of foraging and cluster habitat will be dependent upon habitat restoration regarding hardwood removal, plantation thinning, and time for the existing tree stands to mature to a suitable size for RCW cavity construction. Expansion will be a slow process as the Post is currently near carrying capacity. However, there is potential to establish cluster sites in additional areas once restoration is complete and the tree stands age. Habitat management at CBJTC includes habitat restoration, wildland fire use, hardwood removal, and plantation thinning. Banding RCWs for translocation and group composition monitoring are also major components of RCW management.

Management Guidelines: The primary documents that outline the management requirements and training restrictions associated with the RCW at CBJTC include the *USFWS Biological Opinion (BO) on the US Army's "Biological Assessment of the Effects of the Proposed Revision of the 1996 Management Guidelines for the Red-cockaded Woodpecker on Army Installations*" (Costa 2007), *Management Guidelines for the Red-cockaded Woodpecker on Army Installations* (US Army 2007), *Biological Evaluation for Incidental Take in the RCW ESMC Update for the INRMP 2007-2012 for Florida Army National Guard (FLARNG) - CBJTC* (Robinson 2008), and the USFWS letter that modifies the BO by Costa (2007) and allows incidental take in accordance with the ESMC update (Hankla 2008). These documents were prepared in accordance with the *USFWS RCW Recovery Plan, 2nd Revision* (USFWS 2003), and a copy of them is included in **Appendix D**.

US Army (2007) guidelines establish baseline standards for Army installations in managing the RCW and its habitat, and recommend the development of an installation RCW ESMC to supplement these guidelines. FLARNG updated their ESMC to establish incidental take guidelines for CBJTC based on the new guidance documents. The amended ESMC establishes the removal of **all** training restrictions from RCW clusters that are not necessary to maintain CBJTC's recovery goal of 25 PBGs. For example, if 30 clusters are required to maintain the 25 PBGs, then all 30 clusters will continue to be under the "protected" status in accordance with the RCW BO and management guidelines. In this example any cluster above the amount required to maintain the 25 PBGs (i.e., clusters >30) would go into the "unrestricted" status. The "unrestricted" clusters would be invisible to military personnel training in the field except for the nest tree during the breeding season (April – July), which will remain temporarily marked and considered "protected" (Robinson 2008). USFWS concurred on 3 December 2008 with the ESMC update for incidental take at CBJTC (Hankla 2008). CBJTC has currently met its recovery goal of 25 PBGs. The following management measures will be implemented for RCWs at CBJTC:

- Continue to implement habitat restoration efforts for the RCW to allow for the expansion of foraging and cluster habitat to the extent possible through the forestry and wildland fire management programs (see **Sections 4.4** and **4.5**).
- Manage and monitor flame length and fire intensity in the area around each cavity tree. In addition, all cavity trees should be cleared around before the fire and pre-lit if possible, during the day of the burn.

- Continue to participate in the Southern Range Translocation Cooperative. Translocations of RCWs are critical to achieve recovery (Costa 2007).
- Prohibit training activities within "protected" RCW cluster sites and "protected" nest trees in "unrestricted" clusters in accordance with the *Management Guidelines for the RCW on Army Installations* (US Army 2007) (see **Appendix D**).
- Allow **all** types of training within "unrestricted" clusters in accordance with the ESMC update for incidental take at CBJTC (Robinson 2008) and USFWS's BO revision (Hankla 2008), with the exception of "protected" nest trees that will be temporarily double banded every year during the breeding season (April-June).
- Continue to identify all "protected" clusters by signs where roads and trails intersect cluster boundaries and double white tree banding on all start and cavity trees.
- Re-implement **all** training restrictions if CBJTC falls below the recovery goal of 25 PBGs, and contact the USFWS Jacksonville Field Office.

Wood Stork: Although previously observed, no wood storks were documented in the most recent rare species survey at CBJTC. The southeast US population of wood storks is believed to be a single population that responds to environmental changes and relocates its rookery sites accordingly. Although the federally threatened wood stork could potentially be found onsite foraging, it is unlikely that wood storks inhabit CBJTC because typical nesting and roosting habitat are not present. Furthermore, no roosting sites are known within 20 miles of the installation (Bio-tech 2009).

Management Guidelines: No specific management measures for the wood stork are included as this species would likely only be using CBJTC as a stopover location due to the lack of nesting and roosting habitat. Wetland and riparian habitat management will benefit this species (see **Section 4.4.7**) along with other state listed wading birds (e.g., snowy egrets, little blue herons).

Chapman's rhododendron: Chapman's rhododendron is endemic to Florida (Chafin 2000) and is known to occur currently within two areas of the panhandle and at CBJTC (Bio-tech 2009). This plant is found in pinelands that are favorable for commercial production and borders of bay swamps (Chafin 2000). Approximately 30 clumps of Chapman's rhododendron are located just east of Avenue B between Jacksonville Street and Arcadia Street (Bio-tech 2009).

Management Guidelines: Timber harvesting, site preparation and pine planting will harm this plant. To protect and enhance this species at CBJTC, the following management actions are recommended in areas where this species is known to occur:

- Use prescribed fire to stimulate the flowering and sprouting of this plant.
- Avoid tree planting, soil disturbance, and other land clearing activities (Chafin 2000).

4.7.2 Federally Threatened Species

Florida Scrub-Jay: The Florida scrub-jay generally inhabits fire maintained oak scrub on well-drained, sandy soils in open areas without a dense canopy. Saw palmetto, sand pine, and rosemary generally occur

within their desired habitat. (Hipes et al. 2000, Bio-tech 2009). Though located at the northern limits of the Florida scrub-jay's current population range, CBJTC does contain several hundred acres of scrub habitat previously occupied by the bird. An isolated population of three jays occurred on Camp Blanding's Cantonment Scrub as late as 2004, though sightings dwindled sharply in that scrub with rare single bird sightings until 2006. A single Florida scrub-jay was documented eight miles south in Camp Blanding's Lowry Scrub in 2012, where it was inconsistently sighted until 2015; this is the last sighting of the species on-post.

The nearest population of significant size is nearly 25 miles south of CBJTC in the Ocala National Forest (McMillian et al. 2010), though in 2020 and again in 2021 a single individual was photographically documented in the scrub of the adjacent Goldhead Branch State Park.

Experts suggest it is unlikely, even with the enhancement of scrub habitat on the installation, that a migration and substantial increase in population will occur due to CBJTC's distance from any significant populations making natural colonization unlikely (McMillian et al. 2010). Following consultation with regulators and the Florida Scrub-Jay Working Group, Camp Blanding Environmental maintains a policy to monitor the various scrubs on Camp Blanding for Florida scrub-jays on a three-year rotation

Management Guidelines: Population declines of the Florida scrub-jay are the result of habitat loss from agriculture, development, and fire suppression. Although a large-scale increase in population may not be possible, the following management actions are recommended to maintain and/or enhance suitable habitat for this species at CBJTC:

- Monitor the status of this species as its status could change rapidly.
- Maintain existing scrub habitat at CBJTC through the use of prescribed fire (see **Section 4.4.6**). Prescribed fire every 8 to15 years that burns patchily, where few territories are burned completely, is most favorable (Hipes et al. 2000).
- Consider expanding potential habitat by managing overgrown patches of sand pine scrub or establishing habitat in the former mining area assuming sufficient acreage is available. See **Section 4.4.5** for vegetation management within the mining area.
- Consider surrounding habitats before implementing measures to enhance Florida scrub-jay habitat and ensure sufficient buffers exist (e.g., minimum of 1,000 feet). For example, this species will not use scrub areas within 300 feet of heavily forested areas because avian predators are more likely to occur.

Eastern Indigo Snake: The eastern indigo snake uses a wide range of habitats including scrub, sandhill, and wetland habitat. However, this snake requires large tracts of land to survive. This snake is known to use gopher tortoise burrows (see below) as a refuge from the elements, including cold temperatures and fire, but is also known to take refuge in stump holes. In northern Florida, it winters mostly in gopher tortoise burrows (Hipes et al. 2000). Eastern indigo snakes have been documented in sandhill habitat, scrub, pine flatwoods, pine plantations, and near gopher tortoise burrows at CBJTC (Bio-tech 2009, FDMA 2011).

Management Guidelines: Eastern indigo snakes are threatened due to habitat loss and degradation resulting from land clearing activities, vehicular traffic, and other development. CBJTC contains a large amount of suitable habitat; however, FLARNG has limited information on indigo snakes locations and

distributions as only a few have been observed during previous surveys (FDMA 2011, Bio-tech 2009).

The following management actions are recommended for this species at CBJTC:

- Obtain a better understanding of overall population abundance and distribution within CBJTC by implementing a multi-year survey and the new USFWS survey protocols for eastern indigo snakes.
- Protect large areas of suitable habitat (i.e., more than 5,000 acres).
- Avoid construction of new roads within unfragmented habitat.
- Maintain gopher tortoise populations, and protect gopher tortoise burrows and dead stumps as they are used as den habitat.
- Implement forest management strategies discussed in **Section 4.4**.
- Educate site users to prevent collection or harm to these snakes.
- Partner with the DOD/DOI Recovery and Sustainment Partnership Initiative and other similar cooperative scientific efforts targeting eastern indigo snakes to continue and improve survey techniques.

American Alligator: The American alligator is listed as threatened by USFWS due to its similarity in appearance to the federally endangered American crocodile (*Crocodylus acutus)*. The American alligator inhabits fresh and brackish marshes, ponds, lakes, rivers, swamps, bayous, and large spring runs. CBJTC contains habitat typically used by the alligator and was observed in several locations within South and East Post (Bio-tech 2009).

Management Guidelines: Although this species was once in danger of extinction, it was declared fully recovered in 1987. Because some related animals (e.g., crocodile and caimans) are similar and a concern, USFWS continues to regulate the harvest and trade of alligators (USFWS 2008). The American alligator will benefit from wetland and riparian habitat management (see **Section 4.4.7**).

4.7.3 Federal Candidate Species

Gopher Tortoise: The gopher tortoise is a federal candidate species for listing as a threatened species and a state-listed threatened species that is typically found in dry upland habitats, such as sandhill, scrub, and pine flatwoods. Gopher tortoises excavate deep burrows for refuge from predators, weather, and fire (Hipes et al. 2000). The gopher tortoise is considered a keystone species because their burrows provide refuge for more than 300 animal species that neither harm nor benefit the gopher tortoise, including the eastern indigo snake, Florida pine snake, Florida mouse, and gopher frog (FDMA 2011). The gopher tortoise population is thriving at CBJTC; the installation has been used in the past for the relocation of gopher tortoises displaced by development in northeastern Florida.

Through appropriate habitat management, CBJTC will manage existing high quality habitat as well as improve and restore degraded habitat in xeric uplands and natural communities that support the gopher tortoise (see **Sections 4.4.3, 4.4.4,** and **4.4.6**). Frequent prescribed fire will be the primary tool, but other treatments, such as mechanical and chemical removal of hardwoods, replanting longleaf pine or native

grasses and other ground cover in appropriate areas, and plantation thinning will be used when necessary. Maintaining these communities in a manner that replicates their natural form and function helps ensure they meet the needs of the gopher tortoise and the other species dependent on these communities.

Management Guidelines: Gopher tortoises are vulnerable to several threats within their range, including habitat degradation and loss (FFWCC 2012). The following management actions are recommended.

- Maintain a 25-foot boundary around all gopher tortoise burrows within the vicinity of projects and military training that have the potential to collapse burrows.
- Identify these burrows with high visibility signs indicating the 25-foot boundary where gopher tortoises will not be relocated during a project or military training.
- Manage fuel loads by implementing dormant season burns in units with high fuel loads and conduct maintenance burns during the growing season on a 1-3 year rotation.
- Natural stands will be maintained with their uneven-age or several-age structure. At cutting cycles of approximately 25 years, and stand density will be reduced to basal areas between 60 and 80 square feet (sq-ft) per acre.
- Underplant turkey oak stands with containerized longleaf pine seedlings if natural regeneration is less than 200 longleaf pine seedlings per acre. Where practical and necessary, treatments such as mechanical thinning and herbicide treatment may be used to reduce the hardwood midstory.
- Harvest and remove on a large scale existing sand pine stands while retaining any volunteer or original longleaf pines. After 2-3 years the stands will then be burned and/or chopped, and replanted with containerized longleaf pine.
- Control invasive and exotic species and noxious weeds through early detection, isolation of infested areas, and control of individual plants with physical, chemical, or mechanical means, depending on the species.

Permitting: In addition to its status as a federal candidate species, the gopher tortoise is listed by the state of Florida as threatened. Because gopher tortoise habitat can overlap lands used by people for agriculture, industrial, or residential purposes, the FFWCC has created a permitting process for the relocation of gopher tortoises from locations where scheduled operations could endanger the animal or its burrows.

Military training and readiness activities on-post often develop rapidly, shift quickly, and bear unique mission requirements. This fact necessitated the development of a set of guidelines for CBJTC to successfully maintain its training mission while complying with the FFWCC's gopher tortoise permitting and management requirements. In order to sustain no net loss to training while maintaining gopher tortoise habitat and population numbers on the installation, Camp Blanding and FFWCC collaborated to develop in-depth parameters to comply with the Gopher Tortoise Permitting Guidelines, April 2008 – Revised September 2012. The details of this agreement and the data collected to support it can be found in **Appendix N**.

4.7.4 General Management Strategies

The following general guidelines will be followed to facilitate the military mission and natural resources management objectives while minimizing negative impacts on rare species and their habitats:

- Conduct military training and natural resources management in accordance with the current RCW BO (Costa 2007), RCW management guidelines for Army installations (US Army 2007), CBJTC ESMC update for incidental take (Robinson 2008, Hankla 2008) (see **Appendix D**). If PBGs fall below the recovery goal of 25, **all** training restrictions must be re-implemented and CBJTC-ED will notify USFWS.
- Maintain a habitat mosaic using an ecosystem management approach that incorporates prescribed fire, forestry, and invasive species control to support a diversity of rare species.
- Continue to manage for large tracts of forest.
- Use prescribed fire to restore sandhill, flatwoods, and other natural and rare communities dependent on a regular fire interval for indigenous and rare species (see **Sections 4.4 and 4.5**).
- Minimize the amount of herbicides used for invasive species control.
- Maintain corridors between wetlands, lakes, and other waterbodies to provide for wildlife movement between areas.
- Update biological inventories as needed as the occurrence of threatened and endangered species is subject to change over time as a result of either recruitment, identification of additional protected species, or the change in status of species currently present at CBJTC.
- Implement a 1,500-foot radius protection zone around active bald eagle nests. If new land disturbing activities are proposed within 660 feet of a bald eagle nest, refer to FFWCC's (2008) *Bald Eagle Management Plan* which is included in **Appendix E**.
- Continue to coordinate and work with FFWCC on rare species management.
- Incorporate information on rare species protection and any related restrictions in environmental awareness documents and briefings to educate site users and prevent incidental take.

4.8 Invasive Species and Integrated Pest Management

GOAL IN: Minimize impacts of invasive and pest species, while minimizing use of chemicals to manage those species, utilizing an integrated pest management approach.

OBJECTIVE IN1: Control and minimize the impact of invasive plant and animal species.

OBJECTIVE IN2: Limit connectivity between disturbed sites to minimize spread of invasive species and pests.

OBJECTIVE IN3: Monitor low priority invasive species for their presence and/or spread and modify their priority as needed.

Primary Regulatory Drivers

- Federal Noxious Weed Act
- Federal Insecticide, Fungicide & Rodenticide Act
- National Aquatic Invasive Species Act
- AR 200-1
- EO 13112
- FAC 5B-57 (Noxious Weeds)
- FAC 5B-64 (Prohibited Aquatic Plants)

Invasive and exotic species may include plants, insects, or animals. An **invasive** species is defined as "any native or alien species whose lack of control or introduction does or is likely to cause economic or environmental harm or harm to human health." An alien (or **non-native**) species is defined as a "species including its seeds, eggs, spores, or other biological material capable of propagating that species that is not native to that ecosystem (EO 13112)." Because of their invasive capacity, many exotic species have the ability to spread rapidly through ecosystems since their natural predators are often not present. Such species often retard natural succession and reforestation and generally cause a reduction of biological diversity in natural ecosystems.

Noxious weeds are defined as "any living stage (e.g., seeds and reproductive parts) of any parasitic or other plant of a kind, or subdivision of a kind, which is of foreign origin, is new to or not widely prevalent in the United States, and can directly or indirectly injure crops, other useful plants, livestock, or poultry or other interests of agriculture, including irrigation, or navigation or the fish and wildlife resources of the United States or the public health (Federal Noxious Weed Act of 1974)."

4.8.1 Integrated Pest Management

CBJTC has an Integrated Pest Management (IPM) Program implemented by FLARNG IPMP (**Appendix Q**). IPM is the use of multiple techniques in a compatible manner to avoid damage and minimize adverse environmental affects while obtaining control of target pests. The goal of IPM is to utilize non-chemical procedures to control pests, including both invasive and exotic plant and animal species.

Typically a combination of the following IPM techniques is required to resolve a problem on a sustained basis:

- *mechanical control*, which alters environments in which pests live, traps or removes pests (*e.g.*, glue boards in interior settings and live-traps) from where they are not wanted, or excludes pests from where they are not wanted (*i.e.,* screening);
- *cultural control*, which manipulates environmental conditions to suppress or eliminate pests (*e.g.,* removal of food scraps or spreading manure on fields);
- *biological control*, which uses predators, parasites, or disease organisms to control pests; and
- *chemical control*, which relies on pesticides and/or herbicides to kill pest and/or undesirable species of plants.

The IPMP includes pest identification and management requirements, outlines the resources necessary for surveillance and control, and describes the administrative, safety, and environmental requirements of the program. This plan serves as a tool to reduce pesticide use, enhance environmental protection, and maximize the use of IPM techniques. It is the policy of FLARNG to minimize the use of all pesticides, including herbicides, at the installation. CBJTC has no dedicated pest management personnel and meets these requirements by additional duty staffing, use of supervised inmate support, and contracted pest management.

FLARNG IPMP identifies all sites at CBJTC where pest control or pest management operations are conducted, which pests are controlled or have potential for causing pest problems, and areas of responsibility. The IPMP discusses the following priorities of pest control operations in great detail; therefore, information will not be duplicated in this plan:

- Disease Vectors and Public Health Pests: mosquitoes; ticks; widow spiders; fire ants; bees, hornets, yellow jackets, and wasps; scorpions; poisonous snakes; American alligators; skunks, raccoons, bats, stray cats, and dogs.
- Pest of Real Property: subterranean termites; birds and bats roosting in structures; squirrels, rats, and mice.
- Stored Food Product Pests: beetles, moths, and rodents.
- Other Undesirable Vegetation: weeds; oaks and other non-climax forest species.
- Animal Pests: mice and rats; skunks and raccoons; stray dogs, and cats; Bird Aircraft Strike Hazard species.
- Household and Nuisance Pests: rodents, crawling insects, and spiders.
- Ornamental Plant and Turf Pests: insect pests such as southern pine beetle, etc.
- Other Pest Management Requirements: carcass removal, odor control.

A permitting program has been established under Chapter 62C-20, FAC for Aquatic Plant Management. No person or public agency shall control, eradicate, remove, or otherwise alter any aquatic weeds or plants

in waters of the state unless a permit for such activity has been issued by FDEP or unless the activity is in waters expressly exempted by FDEP rule. Before controlling aquatic plants, CBJTC must contact the appropriate regional office to determine if a permit is required.

4.8.2 Guidelines for Invasive Species Management

Invasive, non-native species, and noxious weeds have the capability to significantly impact native vegetation by changing fuel loads, flammability, and outcompeting native species. A key element of INRMP implementation is to ensure “no net loss” of military training capability. Management of undesirable species is necessary to maintain military training areas in usable condition. In addition, uncontrolled animal pests can significantly damage the pine stands and impact the forestry program and/or become health hazards, which could threaten the military mission.

The task of controlling invasive and exotic species and noxious weeds is often expensive, lengthy, and risky because total eradication is required to prevent reestablishment. However, in accordance with laws and regulations pertaining to the management of these species, FLARNG will work to prevent the introduction of these species and take measures to control them in an economically and environmentally sound manner. General management strategies are as follows:

- Coordinate with local expert authorities to update the lists of Category 1 and 2 invasive species (Florida Invasive Species Council, University of Florida Institute of Food and Agricultural Sciences, FWC, USFWS, etc.)
- Implement BMPs to minimize land disturbances that favor invasion and re-vegetate disturbed areas with native species.
- Local rock/substrate should be used instead of non-indigenous rock when practical for maintenance or construction projects.
- Utilize mulches from CBJTC or certified weed-free sources to facilitate the establishment of native groundcover on impoverished soils.
- Maintain biodiversity and undisturbed habitat to maximize resilience to and competition with invasive species.
- Control invasive and exotic species and noxious weeds through early detection, isolation of infested areas, and control of individual plants with physical, chemical, or mechanical means, depending on the species.
- Favor basal application and spot treatment, to the extent possible, to prevent adverse impacts to native plants and wildlife.
- Avoid herbicide use in and around wetlands and other surface waters (see **Section 4.3**).
- Do not use invasive plant, non-native species in landscaping (see **Section 4.4.9**).

It is important to prevent the initial spread of invasive and exotic species and address the spread of such species as early as possible to reduce the amount of required herbicide applications. CBJTC-ED should evaluate the threat of invasive species as well as the environmental impacts of herbicide usage (if required) to the environment prior to implementing any eradication and/or control program.

One of the most effective ways of preventing new invasive species is to limit all landscaping plants to only native species. Landscaping is limited to the cantonment area on CBJTC. For information about landscaping on CBJTC, refer to **Section 4.4.9**. Native plants suitable for planting in Florida are available at http://www.fnps.org/plants and additional guidance is available in *The Florida Yards & Neighborhoods Handbook*: http://floridayards.org/landscape/The_Florida_Yards_and_Neighborhoods_Handbook.pdf.

4.8.3 Potential and Known Invasive Species

There have been numerous surveys that have identified non-native plants and animals on CBJTC, including in-house observations during other activities. Of the species documented on CBJTC, three species are on the USDA list for federal noxious weeds. There are eight species on the state noxious weed list (FDACS 2016) and four species that are prohibited aquatic plants (FDACS 2008).

There are numerous sources discussing invasive species in Florida and that indicate county occurrences for invasive species. **Table 14** presents a list of invasive species with the potential to occur in Clay County; the list was compiled from the following sources:

- iMapInvasives geotracking invasive exotic species: http://www.imapinvasives.org/
- Early Detection and Distribution Mapping System: http://www.eddmaps.org/tools/countyplants.cfm?id=us_fl_12019
- Nonindigenous Aquatic Species: http://nas.er.usgs.gov/queries/SpeciesList.aspx?group=&size=50&sortBy=1&status=0&fmb=0&pathway=0&stcolist=FL%20--%20Clay
- First Coast Invasive Working Group: http://www.floridainvasives.org/FirstCoast/Distribution/index.html

Table 14 also indicates whether the species has been documented on CBJTC and what the management priority and goal is for that invasive species (if there is one). Most of the invasive species that are present are difficult to eradicate, so the focus is on maintaining healthy native habitats resilient to invasion by non-native species, with targeted eradication and control of high priority species.

Table 14. Potential Non-Native Species at CBJTC					
Scientific Name	**Common Name**	**Invasive Status**	**On CBJTC**	**Management Goal**	**Priority**
Plants					
Albizia julibrissin	Mimosa	FLEPPC1	✓	Monitor	4
Alternanthera philoxeroides	Alligatorweed	PAP1, FLEPPC2	✓		
Ardisia crenata	Coral ardisia	FLEPPC1	✓	Detect & Eradicate	5
Asparagus aethiopicus	Asparagus fern	FLEPPC1			
Begonia cucullata	Wax begonia	FLEPPC2	✓		
Bidens pilosa	Hairy beggarticks		✓		
Broussonetia papyrifera	Paper-mulberry	FLEPPC2	✓		
Casuarina equisetifolia	Australian pine	SNW, PAP1, FLEPPC1	✓	Detect & Eradicate	5
Cinnamomum camphora	Camphortree	FLEPPC1	✓	Monitor	4
Clematis terniflora	Sweet autumn virginsbower	FLEPPC2			
Cnicus benedictus	Blessed thistle				
Colocasia esculenta	Wild taro	FLEPPC1	✓	Control	2
Crotalaria spectabilis	Showy rattlebox		✓		
Cuphea carthagenensis	Tarweed cuphea				
Dactyloctenium aegyptium	Crow-foot grass	FLEPPC2	✓		
Dioscorea bulbifera	Air-potato	SNW, FLEPPC1	✓	Control	3
Eichhornia crassipes	Waterhyacinth	PAP1, FLEPPC1	✓	Monitor	4

Table 14. Potential Non-Native Species at CBJTC

Scientific Name	Common Name	Invasive Status	On CBJTC	Management Goal	Priority
Elaeagnus pungens	Thorny olive	FLEPPC2	✓		
Eleusine indica	Goosegrass		✓		
Emilia fosbergii	Cupid's-shaving-brush				
Eriobotrya japonica	Loquat				
Hedera helix	English ivy				
Hydrilla verticillata	Hydrilla	FNW, PAP1, FLEPPC1			
Hygrophila polysperma	Miramar weed	FNW, PAP2, FLEPPC1			
Imperata cylindrica	Cogongrass	FNW, SNW, FLEPPC1	✓	Eradication	1
Indigofera hirsuta	Hairy indigo		✓		
Kummerowia striata	Common lespedeza		✓		
Lantana camara	Lantana	FLEPPC1	✓	Monitor	4
Ligustrum lucidum	Glossy privet	FLEPPC1			
Ligustrum sinense	Chinese privet	FLEPPC1	✓		
Lonicera japonica	Japanese honeysuckle	FLEPPC1	✓	Detect & Eradicate	5
Ludwigia grandiflora	Water primrose				
Ludwigia peruviana	Primrose-willow	FLEPPC1			
Lygodium japonicum	Japanese climbing fern	SNW, FLEPPC1	✓	Eradicate	1
Lygodium microphyllum	Old world climbing fern	FNW, SNW, FLEPPC1			

Table 14. Potential Non-Native Species at CBJTC

Scientific Name	Common Name	Invasive Status	On CBJTC	Management Goal	Priority
Macfadyena unguis-cati	Catclaw-vine	FLEPPC1			
Medicago lupulina	Black medic		✓		
Melia azedarach	Chinaberry	FLEPPC2	✓	Control	2
Melilotus officinalis	Yellow sweetclover				
Melinis minutiflora	Molasses grass	FLEPPC2	✓		
Melinis repens	Natalgrass	FLEPPC1	✓	Monitor	4
Morus alba	White mulberry				
Myriophyllum aquaticum	Brazilian watermilfoil				
Myriophyllum spicatum	Eurasian watermilfoil	PAP1, FLEPPC2			
Nandina domestica	Sacred bamboo	FLEPPC1	✓		
Nasturtium officinale	Water-cress				
Nephrolepis cordifolia	Narrow swordfern	FLEPPC1			
Orobanche minor	Small broomrape	FNW, SNW			
Paederia foetida	Skunk-vine	SNW, FLEPPC1			
Panicum repens	Torpedo grass	FLEPPC1	✓	Monitor	4
Paspalum urvillei	Vaseygrass		✓		
Pennisetum purpureum	Elephant grass	FLEPPC1	✓	Detect & Eradicate	5
Phalaris canariensis	Canarygrass				
Phyllanthus urinaria	Chamber bitter		✓		

Table 14. Potential Non-Native Species at CBJTC

Scientific Name	Common Name	Invasive Status	On CBJTC	Management Goal	Priority
Phyllostachys aurea	Golden bamboo	FLEPPC2			
Pistia stratiotes	Waterlettuce	PAP2, FLEPPC1			
Plantago lanceolata	Buckhorn plantain		✓		
Polypogon monspeliensis	Rabbitfoot polypogon				
Pueraria montana	Kudzu	SNW, FLEPPC1	✓	Control	3
Ripidium ravennae	Ravennagrass				
Rosa bracteata	Macartney rose				
Ruellia simplex	Britton's wild petunia				
Rumex crispus	Curly dock		✓		
Sacciolepis indica	Glenwoodgrass		✓		
Salvinia minima	Water spangles	FLEPPC1			
Salvinia molesta	Giant salvinia	FNW, SNW, PAP1			
Schinus terebinthifolius	Brazilian pepper tree	SNW, PAP1, FLEPPC1	✓	Detect & Eradicate	5
Senna occidentalis	Coffee senna		✓		
Sesbania punicea	Red sesbania, rattlebox	FLEPPC2	✓	Eradicate	2
Setaria pumila	Yellow foxtail	FNW	✓		
Solanum viarum	Tropical soda apple	FNW, SNW, FLEPPC1	✓	Detect & Eradicate	5
Sorghum halepense	Johnson grass		✓	Detect & Eradicate	5
Tradescantia fluminensis	White-flowered spiderwort				

Table 14. Potential Non-Native Species at CBJTC

Scientific Name	Common Name	Invasive Status	On CBJTC	Management Goal	Priority
Triadica sebifera	Chinese tallowtree	SNW, FLEPPC1	✓	Eradicate	2
Trifolium campestre	Large hop clover		✓		
Urochloa mutica	Para grass	FLEPPC1	✓		
Verbena bonariensis	Tall vervain				
Vernicia fordii	Tungoil tree				
Wisteria sinensis	Chinese wisteria	FLEPPC2			
Xanthosoma sagittifolium	Arrowleaf elephant's ear	FLEPPC2			
Animals					
Canis familiaris	Feral dog		✓	Eradicate	3
Felis catus	Feral cat		✓	Eradicate	3
Mus musculus	House mouse				
Rattus norvegicus	Norway rat		✓	Eradicate from Structures	1
Rattus rattus	Black rat		✓	Eradicate from Structures	1
Sus scrofa	Feral hog		✓	Control	3
Vulpes vulpes	Red fox		✓		
Rhinella marina	Cane toad				
Osteopilus septentrionalis	Cuban treefrog				
Eleutherodactylus planirostris	Greenhouse frog		✓		

Table 14. Potential Non-Native Species at CBJTC

Scientific Name	Common Name	Invasive Status	On CBJTC	Management Goal	Priority
Anolis sagrei	Brown anole		✓		
Passer domesticus	House sparrow		✓		
Sturnus vulgaris	European starling		✓		
Xyleborus glabratus	Redbay ambrosia beetle				
Agrilus planipennis	Emerald ash borer				

FNW = Federal Noxious Weed from USDA Animal and Plant Health Inspection Service (USDA 2010)

SNW = State Noxious Weed (Rule 5B-57.007 FAC, FDACS 2016)

PAP1 = Prohibited aquatic plant, Class 1 (Prohibited from possession; Rule 5B-64.011 FAC; FDACS 2008)

PAP2 = Prohibited aquatic plant, Class 2 (Limited possession)

FLEPPC1 = Category 1 species identified by the Florida Exotic Pest Plant Council (FLEPPC) (invasive plant altering native communities) (FLEPPC 2019; https://www.fleppc.org/list/list.htm_

FLEPPC2 = Category 2 species identified by the FLEPPC (invasive plant species increasing in abundance but not altering native plant communities)

Non-native animals from http://myfwc.com/wildlifehabitats/nonnatives/.

CBJTC Priority: 1 = programmed eradication, 2 = reasonable control efforts, 3 = opportunistic control, 4 = monitor and evaluate impact annually, 5 = early detection

4.8.4 Priority Invasive Plant Species

There are two invasive plant species considered very high (Priority 1) and four considered high priority (Priority 2) for management at CBJTC: cogongrass (*Imperata cylindrica*), Japanese climbing fern (*Lygodium japonicum*), Chinese tallow tree (*Triadica sebifera*), red sesbania (*Sesbania punicea)*, wild taro (*Colocasia esculenta*) and Chinaberry tree (*Melia azederach*). One of the primary sources of information about managing invasive plants in Florida is *Integrated Management of Nonnative Plants in Natural Areas of Florida* by Langeland et al. (2018) available at http://edis.ifas.ufl.edu.

Prescribed fire may be applied as an invasive plant management tool; however, prescribed burning affects whole plant communities, not just the target invasive plant species. Consequently, controlling invasive plants with fire requires strategies that address invasive plant species at the population level in addition to all plant species at the community level. In general, as an invasive species management tool, prescribed fire is used to both reduce the dominance of a target invasive plant species, and to increase the dominance and diversity of desirable plant species. However, the effect of fire on an invasive plant species depends on the biological characteristics of the target species. Furthermore, the immediate and long-term response of plant communities is influenced by pre- and post- fire climate variables, activities of other taxa, management activities, natural and human-caused disturbances, as well as other environmental variables. Available information regarding prescribed fire as a means of invasive species control is provided below for both high and medium priority invasive species.

4.8.4.1 Cogongrass (Priority 1)

Cogongrass, a perennial grass native to Southeastern Asia, has become a serious problem in the southeastern US and is considered one of the worst noxious weeds in the world. It spreads by both seed and rhizomes and can displace other vegetation in forests, rangelands, pastures, roadsides, and natural areas. There is the potential that it will invade areas that are not intensively managed, making it difficult to re-establish native habitat. It is fairly easy to kill the aboveground biomass; however, it is very difficult to get the herbicide to move to the belowground plant parts that are deep within the soil.

There are many sources of information about control methods and recommendations in Florida. The following is a brief list of available resources for cogongrass.

- Cogongrass Biology, Ecology and Management in Florida: http://www.cogongrass.org/WG20200.pdf
- Biology and Management of Cogongrass (University of Florida): http://edis.ifas.ufl.edu/fr252
- FFS, Beware of Cogongrass: http://www.floridaforestservice.com/forest_management/fh_invasives_cogon.html
- Cogongrass website: http://www.cogongrass.org
- A Cogongrass Management Guide (Conference Proceedings 2007): http://myfwc.com/media/132151/A_Cogongrass_Management_Guide.pdf

- Center for Aquatic and Invasive Plants: http://plants.ifas.ufl.edu/node/199
- FLEPPC: http://www.fleppc.org/ID_book/Imperata%20cylindrica.pdf
- FFWCC: http://myfwc.com/wildlifehabitats/invasive-plants/weed-alerts/cogon-grass/

Management recommendations for cogongrass generally include:

- ***Prevention:*** Avoid soil disturbance, timber harvest, fire, etc. unless as a part of a specific treatment regime. Always clean equipment after operating in infested areas.
- ***Control:*** To eliminate cogongrass, the rhizomes must be destroyed to avoid regrowth. An integrated approach that combines burning, tillage (mechanical disturbance) and chemical applications provide the best solution for cogongrass management.
    - Initially, cogongrass should be burned or mowed to remove excess thatch and older leaves. Do not mow when seed heads are present. Do not burn without a follow-up herbicide treatment. This initiates regrowth from the rhizomes, thereby reducing rhizome biomass. It also allows herbicides to be applied to only actively growing leaves, maximizing herbicide absorption into the plant. Ideally, burning should take place in the summer. A one-to-four month regrowth period has been shown to provide a sufficient level of leaf biomass for herbicide treatment. Thus, herbicide applications should be targeted in the late summer/early fall – approximately 1 month prior to the average killing frost. The herbicides glyphosate or imazapyr have been shown to provide the best control.
    - If tillage can be incorporated, then a discing treatment directly following a burn is the best approach. This will further deplete the rhizome reserve through desiccation and increase the number of shoots per given area. A one-to-four month regrowth period before herbicide treatment is also needed with this approach as well.
    - Once good control of cogongrass has been achieved, it is essential to introduce desirable vegetation as quickly as possible to prevent cogongrass from re-infesting the area. However, cogongrass will eventually begin to re-infest, regardless of control. Therefore, diligence and persistence are essential to remove/treat re-infested areas before this grass regains a foothold.
- ***Timing:*** If you can only do one treatment a year, apply your treatment in the fall before the first frost. Otherwise, re-treat regularly whenever adequate foliar re-sprout has occurred.

4.8.4.2 Japanese climbing fern (Priority 1)

Japanese climbing fern is a non-native, invasive vine which since its introduction around 1900 has become established throughout the southeastern Coastal Plain from the Carolinas to Texas and Arkansas. This fern is native to eastern Asia from Japan and west to the Himalayas, and occurs in sunny or shady locations, usually in damp areas such as the edges of swamps, marshes, lakes, creeks, hammocks, and upland woodlands.

There are many sources of information about control methods and recommendations in Florida. The following is a brief list of available resources for Japanese climbing fern.

- Center for Aquatic and Invasive Plants: http://plants.ifas.ufl.edu/node/639
- Biology and Control of Japanese climbing fern: http://edis.ifas.ufl.edu/fr280
- FLEPPC: http://www.fleppc.org/ID_book/Lygodium%20japonicum.pdf
- FFWCC: http://myfwc.com/wildlifehabitats/invasive-plants/weed-alerts/japanese-climbing-fern/

Management recommendations for Japanese climbing fern generally include:

- ***Prevention:*** Monitoring is very important in the strategy for the management of these climbing ferns. Constant monitoring can aid in the detection of new populations. Steps to prevent spore movement or formation are the key in controlling climbing fern. Since the microscopic spores are easily transported via clothing, wind, and possibly water, contamination is a constant threat. Control measures should be employed when the fern is not producing spores, which occurs in the late summer/early fall. If control measures must be employed during spore formation and dispersal, then these areas should be treated at a time when workers will not be traveling to other sites in the same day. Take care not to drive equipment through the fern foliage, as this will also help to minimize spore movement.
- ***Control:*** Fire is not thought to be an effective means for control because the fern re-grows quickly following fires. Chemical control is more effective. Combinations of glyphosate and metsulfuron methyl were generally more effective than combinations of glyphosate and imazapyr. Control of Japanese climbing fern improves linearly as the glyphosate product rate is increased from 1 percent to 4 percent of the spray solution. Be sure to include a non-ionic surfactant at 0.25 percent (10 milliliters or 2 teaspoons per gallon of spray solution). A combination of these herbicides has provided good control when applied in the fall of the year before a killing frost.

4.8.4.3 Chinese tallow tree (Priority 2)

Chinese tallow was introduced to the US from eastern Asia, where it has been cultivated for 14 centuries as an oilseed crop. This tree displaces native species and changes natural community structures on the lands it invades. Aggressive efforts have removed this species from all known localities in CBJTC, but monitoring for new sites and new seedlings sprouting at old sites needs to continue. Periodic visual inspections should be sufficient to monitor Chinese tallow tree populations.

There are many sources of information about control methods and recommendations in Florida. The following is a brief list of available resources for Chinese tallow tree.

- Chinese Tallow Management Plan for Florida 2005: http://www.fleppc.org/Manage_Plans/Tallow_Plan.pdf
- Center for Aquatic and Invasive Plants: http://plants.ifas.ufl.edu/node/399
- Biology and Management of Chinese Tallow Tree: http://edis.ifas.ufl.edu/fr251

- USFS: http://na.fs.fed.us/fhp/invasive_plants/weeds/chinese_tallow.pdf
- FLEPPC: http://www.fleppc.org/ID_book/sapium%20sebiferum.pdf
- FFWCC: http://myfwc.com/wildlifehabitats/invasive-plants/weed-alerts/chinese-tallow/

Control recommendations for Chinese tallow tree generally includes:

- ***Mechanical:*** Mature trees should be cut down with a chain saw. The final cut should be made as close to the ground as possible and as level as possible. This will make an herbicide application easier as well as prevent resprouting from the cut. Seedling trees can be mowed or disked when small.
- ***Fire:*** Fire provides partial control of Chinese tallow tree. Larger, mature trees are not impacted by fire because they have developed thick bark and are tall enough to escape the direct flames of the fire. Smaller, young infestations of tallow tree can be controlled by repeated burning. The fire will kill the above-ground stems, but root systems will re-sprout new growth. Thus, repeated burning every 2 to 3 years will be necessary to manage and eventually eliminate this tree.
- ***Chemical:*** Foliar applications are effective on smaller trees, but cut-stump or basal bark treatments are commonly utilized. For foliar applications, fall treatments before seed shed is the optimum timing – this coincides with downward translocation of carbohydrates. However, basal bark or cut stump treatments can be performed at any time of the year. Control can be achieved with the use of triclopyr-ester applied in an oil diluent. For basal bark applications, apply an herbicide/oil mixture directly to the bark around the circumference of the tree up to 15 inches above the ground. For trees with stems less than 6 inches in basal diameter, a solution of 5 percent triclopyr with oil can be used.
- For trees over 6 inches in basal diameter a 15-20 percent triclopyr and oil solution should be used. To control resprouting of freshly cut stumps, a 20 percent solution of triclopyr is very effective. The root collar area, sides of the stump, and the outer portion of the cut surface should be sprayed until thoroughly wet, but not to the point of runoff. No more than 1/2 hour should elapse between cutting and applying herbicide. Do not attempt a cut stump or basal bark treatment during seed production (August to early September). This can increase the chance of spreading viable seed.

4.8.4.4 Red sesbania (Priority 2)

Red sesbania or rattlebox is native to South America. All parts of red sesbania are poisonous, particularly the seeds. Red sesbania displaces native vegetation and wildlife by forming dense thickets. The greatest environmental impacts are near water bodies or along river and stream banks. The Center for Aquatic and Invasive Plants is a good source of information for control methods and recommendations for red sesbania in Florida: http://plants.ifas.ufl.edu/node/418.

Management recommendations for red sesbania generally include:

- ***Prevention:*** The first step in preventative control of red sesbania is to limit planting and remove existing plants within the landscape. If possible, removal should occur before seeds are produced.
- ***Mechanical:*** Cut larger plants and treat stumps with herbicide. Pull young plants by hand or with a weed wrench. Mowing will help but is often not feasible due to wet soil conditions where this species prefers. Mechanical control prior to seed set will be helpful in controlling future infestations, but this must be practiced over a several year period as dormant seeds will continue to germinate.
- ***Chemical:*** Glyphosate has been unsuccessful in Florida when used alone (1 percent, as a foliar spray) and in combination with triclopyr (1 percent Glyphosate, 1 percent triclopyr).

4.8.4.5 Wild taro (Priority 2)

Wild taro was brought from Africa to the Americas as a food crop for slaves and introduced into Florida and other southern states in 1910 as a substitute crop for potatoes. Wild taro is found in swamps and along stream banks. The large leaves may shade and prevent regeneration of desired species. Wild taro is widespread and can frequently be observed along the shorelines of many central Florida lakes.

There are many sources of information about control methods and recommendations in Florida. The following is a brief list of available resources for wild taro.

- Center for Aquatic and Invasive Plants: http://plants.ifas.ufl.edu/node/108
- FLEPPC: http://www.fleppc.org/ID_book/Colocasia%20esculenta.pdf
- FFWCC: http://myfwc.com/wildlifehabitats/invasive-plants/weed-alerts/wild-taro/
- University of Florida: http://plants.ifas.ufl.edu/manage/why-manage-plants/floridas-most-invasive-plants/wild-taro

Management recommendations for wild taro generally include:

- ***Prevention:*** The first step in preventative control of elephant ear and taro is to limit planting and remove existing plants within the landscape.
- ***Mechanical:*** Dig out corms from the soil. Take care when cutting, as the leaves contain oxalic acid, which may cause irritation to exposed skin. Harvest floating mats, but be careful of root fragments that can start new plants.
- ***Chemical:*** Chemicals with known control are limited. Repeated applications of glyphosate (2 percent solution) with a surfactant may be effective, especially if coupled with other management strategies.

4.8.4.6 Chinaberry tree (Priority 2)

Chinaberry tree was introduced around 1830 as an ornamental in South Carolina and Georgia and widely planted in southern states. It occurs primarily in disturbed areas such as road right-of-ways and fencerows, but has also invaded floodplain hammocks, marshes, and upland woods, particularly in north Florida. The fruits are poisonous to humans and some other mammals. Chinaberry has the ability to grow rapidly and displace native vegetation. Through prolific reproduction via seed as well as vegetative reproduction, it is able to shade out other species by forming a dense thicket. The leaf litter produced by Chinaberry causes the soil to become more alkaline, giving an advantage to those species that fare well in alkaline soils. Chinaberry is also believed to have allelopathic properties, prohibiting other species to colonize the area in close proximity to Chinaberry. Overall Chinaberry reduces the plant diversity in any area in which it grows.

There are many sources of information about control methods and recommendations in Florida. The following is a brief list of available resources for Chinaberry tree.

- Center for Aquatic and Invasive Plants: http://plants.ifas.ufl.edu/node/266
- FLEPPC: http://www.fleppc.org/ID_book/melia%20azederach.pdf

Management recommendations for Chinaberry tree generally include:

- ***Prevention:*** Controlling Chinaberry is best accomplished when trees are very young, prior to seed production. Because the seed is very hard, it may remain dormant in the soil for several months or years. Therefore, be persistent and visit a clean site several times before declaring it “Chinaberry-free”. Another preventative measure is to control trees along fencerows and neighboring hedges, limiting seed introduction.
- ***Mechanical:*** Mechanical control is limited to cutting, although mowing prevents seedling establishment in pasture and rangeland settings. It is thought that Chinaberry may be susceptible to fire, but more research must be done to validate this claim. Cutting back Chinaberry must be integrated with chemical control because of its proclivity to resprout.
- ***Chemical:*** Herbicides prove to be the best method of control for Chinaberry. Foliar applications of glyphosate or triclopyr will be fairly effective on trees less than 10 feet tall. A dilution of triclopyr in water can be used. Be sure to include a non-ionic surfactant at 0.25 percent (10 milliliters or 2 teaspoons per gallon of spray solution). A 2 to 3 percent solution of glyphosate can also be effective. A basal bark application of triclopyr has also been shown to be an effective treatment. Triclopyr can be applied in a 4 to 8-inch band near the base of the trunk in a 15 percent solution. Studies have shown a cut stump treatment of 8 percent triclopyr is almost completely effective in eliminating Chinaberry. Herbicides should be applied before the onset of fruit production to prevent seed production. Repeat applications may also be necessary for complete control.

4.8.5 Priority Invasive Animal Species

The only very high or high priority invasive animal species are European rats – both Norway rats (*Rattus norvegicus*) and black rats (*Rattus rattus*). Both are best managed by trapping and removing, as well as using other IPM techniques to minimize rats in buildings.

5.0 PLAN IMPLEMENTATION

5.1 Project Development

Management goals and objectives were developed through a thorough evaluation of the natural resources present on CBJTC. In accordance with AR 200-1 and the principles of adaptive ecosystem management, subject areas were identified, and management activities developed by an interdisciplinary team of ecologists, biologists, geologists, planners, and environmental scientists. **Section 4.0** presents the preferred management alternatives based on the professional opinions and information gathered from various FLARNG directorates, CBJTC staff, USFWS, FFWCC, as well as other federal, state, and local agencies and special interest groups with an interest in the management of CBJTC natural resources. Through these evaluations, a set of natural resources management goals and objectives, and implementing activities and projects, have been established based on the current understanding of CBJTC and the framework of adaptive ecosystem-based planning (see **Section 4.0**).

This INRMP will be implemented through the various policies and programs described throughout the document and accomplishment of the goals and objectives as described in **Section 4.0**. The implementation schedule, project and activity lists, and how the projects relate to INRMP implementation are detailed in **Tables 15 and 16**.

This INRMP is a living document that is based on short-, medium-, and long-term planning horizons. Short-term tasks include activities and projects that are planned to occur in less than 5 years, while medium-term tasks include activities and projects in a 6- to 10-year period. Long-term tasks are usually scheduled beyond 10 years. A majority of the tasks discussed in this INRMP are short and medium-term natural resources management tasks. Goals, objectives, and tasks should be revised over time to reflect evolving environmental conditions, adaptive management, and the completion of tasks as the INRMP is implemented. In addition, medium- and long-term tasks should eventually become short-term tasks over time.

5.1.1 Project Implementation

In accordance with Section 4-3(d)(1)(b) of AR 200-1, an INRMP is considered implemented if an installation:

- Actively requests, receives, and uses funds for priority projects and activities.
- Ensures sufficient numbers of professionally trained natural resources management staff are available to perform the tasks required by the INRMP.
- Coordinates annually with cooperating agencies.
- Documents specific INRMP activities and projects undertaken each year.
- Evaluates effectiveness of past and current management activities and adapts appropriately to implement future actions.

Natural resources and land use management issues are not the only factors contributing to the development and implementation of the INRMP. Range management and other seemingly unrelated issues affect

implementation. It is important to the implementation of this INRMP that CBJTC personnel take ownership of the INRMP by providing the necessary resources (i.e., personnel and equipment) and utilizing the appropriate funding to enact the plan. Funding for INRMP implementation is not limited to environmental funds. Responsibilities for funding natural resources management activities are outlined in the Army Sustainable Range/Installation Environmental Responsibilities Matrix, which is clarified in NGB Army Installations Division (ARNG G-9), Memorandum 17 April 2006, *Clarification of Funding Responsibilities*.

Table 15 (Appendix T) provides an overview of recurring natural resource management activities. These activities are generally performed in-house by CBJTC-ED and ITAM staff. The implementation schedule and planned projects for this updated INRMP are detailed in **Table 16 (Appendix U)**. Table 16 will be used to develop budget requests and schedule annual project requirements. Funding requests will be submitted in accordance with current ARNG G-9 procedures for conservation projects.

5.1.2 Priorities and Scheduling

The Office of Management and Budget considers funding for the preparation and implementation of this INRMP, as required by the SAIA, to be a high priority. However, the reality is that not all of the projects and programs identified in this INRMP will receive immediate funding. Projects need to be funded consistent with timely execution to meet future deadlines. Projects are generally prioritized with respect to compliance. Highest priority projects are projects related to recurring or current compliance, and these are generally scheduled earliest. As such, these projects have been placed into three priority-based categories: (1) high priority projects which are essential for maintaining compliance or for successful natural resources management, (2) medium priority projects with no immediate compliance requirement or less impact on the natural resources, and (3) low priority projects with a natural resource benefit but no legal driver. The prioritization of the projects is based on need, legal drivers, and ability to further implement the INRMP.

Recurring requirements include projects and activities needed to cover the recurring administrative, personnel, and other costs that are necessary to meet applicable compliance requirements (federal and state laws, regulations, Presidential EOs, and DoD policies) or which are in direct support of the military mission. Recurring costs include manpower, training, supplies; hazardous waste disposal; operating recycling activities; permits and fees; testing, monitoring, and/or sampling and analysis; reporting and record keeping; maintenance of environmental conservation equipment; and compliance self-assessments.

Current compliance includes projects and activities needed because an installation is currently or will be out of compliance if projects or activities are not implemented in the current program year. Examples include:

- Environmental analyses, monitoring, and studies required to assess and mitigate potential effects of the military mission on conservation resources.
- Planning documents.
- Baseline inventories and surveys of natural and cultural resources (historical and archaeological sites).
- Biological Assessments, surveys, or habitat protection for a specific listed species.
- Mitigation to meet existing regulatory permit conditions or written agreements.

- Wetland delineations in support of subsequent jurisdictional determinations and consequent permitting.
- Efforts to achieve compliance with requirements that have deadlines that have already passed.
- Initial documenting and cataloging of archaeological materials.

Maintenance requirements include those projects and activities needed that are not currently out of compliance but shall be out of compliance if projects or activities are not implemented in time to meet an established deadline beyond the current program year. Examples include:

- Compliance with future requirements that have deadlines.
- Conservation and GIS mapping to be in compliance.
- Efforts undertaken in accordance with non-deadline specific compliance requirements of leadership initiatives.
- Wetlands enhancement, in order to achieve the executive order for “no net loss” or to achieve enhancement of existing degraded wetlands.
- Public education programs that educate the public on the importance of protecting natural resources.

Lower priority projects include those that enhance conservation resources of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required under regulation or EO and are not of an immediate nature. These projects are generally funded after those of higher priority are funded. Examples include:

- Community outreach activities, such as “Earth Day” and “Historic Preservation Week” activities.
- Educational and public awareness projects, such as interpretive displays, oral histories, nature trails, wildlife checklists, and conservation teaching materials.
- Biological Assessments, surveys, or habitat protection for a non-listed species.
- Restoration or enhancement of cultural or natural resources when no specific compliance requirement dictates a course or timing of action, and there is no impact to military mission.
- Management and execution of volunteer and partnership programs.

5.2 Cooperative Agreements

Intra- and inter-agency cooperation, coordination, and communication at the federal, state, and local levels (e.g., USFWS and FFWCC) are requisite to the success of the INRMP. USFWS and FFWCC review the INRMP and its implementation. Specialized expertise is required to adequately manage natural resources at CBJTC. Technical assistance will be sought from federal and state agencies, universities, and special interest groups.

The DoD and subcommand entities have MOUs, MOAs, and other cooperative agreements with other federal agencies, conservation and special interest groups, and various state agencies in order to provide assistance with natural resources management at installations across the US. Generally, these agreements allow installations and agencies or conservation and special interest groups to obtain mutual conservation objectives. The DoD agreements applicable to CBJTC include:

- MOU between DoD and USFWS concerning ecosystem-based management of fish, wildlife, and plant resources on military lands.
- Cooperative Agreement between the DoD and The Nature Conservancy for assistance in natural resources inventory.
- MOU between the DoD and the USEPA with respect to IPM.
- MOA for federal Neotropical Migratory Bird Conservation Program and addendum ("Partners in Flight-Aves De Las Americas") among DoD, through each of the Military Services, and over 110 other federal and state agencies and non-governmental organizations.
- MOU between the DoD and Ducks Unlimited, Inc. to provide a foundation for cooperative development of selected wetlands and associated uplands in order to maintain and increase waterfowl populations and to fulfill the objectives of the North American Waterfowl Management Plan, within the context of DoD's environmental security and military missions.
- MOU for Watchable Wildlife Programs.
- Candidate Conservation Agreement with Assurances with the USFWS and FFWCC for Multiple At-Risk Species in North Florida (CCAA) on portions of CBJTC that support natural habitat for candidate and at-risk species' and are not at risk of future development or intensive military operations.

CBJTC has MOAs with FFWCC for hunting, fishing, and outdoor recreation use, with FTA for the Florida National Scenic Trail segment within the installation boundaries (see **Appendix I**), and both informal and formal agreements with various agencies for wildland fire assistance (see **Appendix G**). Beneficial partnerships and cooperative agreements for CBJTC are discussed in greater detail in **Section 3.6**.

5.3 Funding

All actions contemplated in this INRMP are subject to the availability of funds properly authorized and appropriated under federal law. Nothing in this INRMP is intended to be nor shall be construed to be a violation of the Anti-Deficiency Act, 31 USC § 1341. The installation requests project validation and funding through FLARNG Environmental Office. Funding sources for specific projects can be grouped into four main categories by source: Forestry Program, ARNG funds, other federal funds, and non-federal funds. This is

not an all-inclusive list of funding sources and available sources and criteria can change from year to year. When activities or projects cannot be completed due to lack of funding or other reasons, FLARNG will review the INRMP to determine whether adjustments are necessary.

5.3.1 Forestry Program

CBJTC's Forestry Program provides a major source of funding for the natural resources program. The program is funded through the Camp Blanding Management Trust Fund (CBMTF) established under Public Law 493, which governs royalties derived from timber harvest activities on the installation. Revenue derived from natural resources, such as forestry, is to be used for the management of natural resources at CBJTC and for its maintenance and preservation as a military installation. Annual timber revenues since 1956 are documented in the FRMP (see **Appendix F**).

5.3.2 ARNG Funding

ARNG is the primary source of funding that supports the management of natural resources at the CBMTC through a master cooperative agreement with FLARNG and managed by FLARNG Environmental Program Manager. Environmental funds typically can be used for core natural resources activities and projects and guidance is provided in funding documents issued yearly. Projects paid for with environmental funds should be submitted through the Status Tool for Environmental Programs (STEP) maintained by the ARNG G-9.

In addition to Environmental funds, Installation and ITAM funds can also be used to implement INRMP activities and projects. Installation funds support facilities operation and maintenance, including facility planning, maintenance of roads, vegetation management, wildfire management, pest management, construction, and master planning. All activities have an impact on natural resources. Installation funds can also be used for pest and noxious weed control, invasive species control, facilities vegetation control and controlled burns to manage vegetation and fuels on training areas and ranges. ITAM funds can be used for monitoring, maintenance of trails, vegetation restoration, land management, and water quality improvements related directly to military training.

The following natural resources management areas can be addressed with multiple funding sources: erosion control, invasive species management, and wildland fire. However, the type of funding used for these management areas depends on purpose. Current guidance should be referred to annually to determine the most appropriate source of funding for a specific activity or project.

5.3.3 Other Federal Funds

Cooperative agreements may be made with state or local governments, non-governmental organizations, and individuals for the improvement of natural resources or to foster research on military facilities. USFWS and FFWCC are cooperators in the development and implementation of the INRMP. In this capacity, they may facilitate access to matching funds and services.

The DoD Legacy Resource Management Program provides financial assistance for natural and cultural resources management efforts on DoD land. Legacy priority projects include regional ecosystem management initiatives, habitat preservation efforts, invasive species control, and/or rare species management. Legacy funds are generally awarded to projects that offer multiple installation applicability.

5.3.4 Non-Federal Funds

Opportunities exist to use state or local funds or private grants to support INRMP projects, particularly those relating to public access or natural resources education. Examples include:

- Public Lands Day grants are relatively easy to obtain and can be used for signs, native plant landscaping, trail construction, and other similar activities using the assistance of volunteers.
- USFWS Coastal Partners Program works with partners to implement projects supporting a science-based approach to habitat connectivity and ecosystem integrity, imperiled and other priority species conservation and recovery, and conservation partnerships leveraging resources to promote stewardship of wildlife.

Non-federal partnerships are beneficial to natural resources management and protection at CBJTC. Entering into cooperative or mutual aid agreements with states, local governments, non-governmental organizations, and other individuals is also a great source of additional resources.

5.4 Natural Resources Management Staffing

CBJTC-ED is composed of eight staff, with each individual possessing subject matter expertise in different areas including natural and cultural resources management, environmental compliance, and pollution prevention. Essential duties include assisting trainers, construction, and facilities personnel to ensure compliance with various federal and state laws. The ITAM program also implements portions of the INRMP; it supports five employees who are responsible for daily training area maintenance and rehabilitation activities (**Section 1.5.7**). Additionally, over 20 personnel at CBJTC are trained and available to participate in wildland fire activities.

When FLARNG does not have expertise or staff in-house to complete projects, other agencies and contractors are used, including FFWCC, FNAI, FLMNH, University of Florida, and private contractors.

5.5 Monitoring INRMP Implementation

5.5.1 CBJTC INRMP Monitoring

Monitoring of INRMP implementation is necessary to facilitate the legal requirements of the SAIA for review for operation and effect (DoDI 4715.03 and see **Section 1.4.2**). These SAIA implementation criteria do not necessarily measure the effectiveness of an INRMP in facilitating mission accomplishment while conserving natural resources. INRMP implementation for CBJTC will be monitored for meeting the legal requirements of the SAIA as well as for other mission and biological measures of effectiveness.

The ultimate successful implementation of this INRMP is realized in no net loss in the capability of CBJTC training lands to support the military mission, while at the same time providing effective natural resources management. Initiation of projects is one measure that is used to monitor INRMP implementation, but it does not give the total picture of the effectiveness of the natural resources management program. Natural resources management is not simply the sum total of projects, interagency coordination, or program funding and staffing. Natural resources management at CBJTC is a program and a philosophy that guides FLARNG's approach to land use. A significant portion of INRMP implementation is done through internal coordination in regard to training site operations and land use decision making. This type of implementation cannot be measured by project implementation or funding levels. It is evidenced by such things as the ability to continually train, sustainable land use, ongoing regulatory compliance, retention of species diversity, retention of surface water quality, and the acknowledgement of sustainable natural resources management by partnering conservation agencies and other interested organizations and individuals.

In order to monitor and evaluate the effectiveness of INRMP implementation, the following will be reviewed as applicable and discussed within the context of the annual review and/or a formal review of operation and effect per DA Memorandum, *Guidance for Implementation of the SAIA,* dated 25 May 2006:

- Impacts to and from the military mission
- Conservation program budget
- Staff requirements
- Program and project implementation
- Trends in species and habitat diversity as evidenced by recurring biological surveys, land use changes, and opinions of natural resource experts
- Compliance with regulatory requirements
- Feedback from military trainers, USFWS, FFWCC, and others

Some of these areas may not be looked at every year due to lack of data or pertinent information. The effectiveness of the INRMP as a mission enabling conservation tool will be decided by mutual agreement of USFWS, FFWCC, and FLARNG during annual reviews and/or reviews for operation and effect.

5.5.2 DA and DoD INRMP Monitoring

The Army uses the Environmental Quality Report (EQR) to monitor SAIA compliance throughout the department. EQR is the automated system used to collect installation environmental information for reporting to DoD and Congress. The EQR system moved to the Army Environmental Reporting Online (AERO) portal in February 2005, creating a day-to-day management tool. The Army Equip module under4 WEBCASS is a full update of the Web-based software EQR application used to convey the Army's environmental status to senior Army leadership, DoD, and Congress since 1997.

Established to fulfill a semi-annual requirement to report the status of DoD's Environmental Quality program to Congress, EQR collects information on enforcement actions, inspections, and other performance measures for high-level reports and quarterly reviews. EQR also helps the Army track fulfillment of DoD Measures of Merit requirements.

The module is designed to coordinate information management for conservation, compliance, pollution prevention, and other Army environmental reporting. It can adapt easily to future changes in command structure or measures of merit. Army Equip provides for the collection, review, and retrieval of data in no less than 14 program areas, from enforcement actions to conservation program metrics.

The DoDI 4715.03 updated the natural resources conservation metrics for preparing and implementing INRMPs. Progress toward meeting these measures of merit is reported in the annual EQR to Congress. DoDI 4715.03 reporting requirements currently include:

- Are INRMP projects, including follow-up inventorying and monitoring work, properly identified, developed, and submitted for funding?
- Has project funding been received, obligated, and expended?
- Have projects been completed and do they meet expected objectives?
- Are conservation efforts effective?
- Does the INRMP provide conservation benefits necessary to preclude a critical habitat designation?
- Are species at risk identified and are steps being undertaken to preclude listing?
- Has the INRMP review team (i.e., DoD, USFWS, and FFWCC) been effective in ensuring the INRMP's implementation?
- Are other partnerships needed to meet the INRMP goals?
- Have other partnerships been effectively used to meet INRMP goals?
- Are public recreational opportunities such as hunting, fishing, and wildlife viewing available to base residents and employees?
- Are public recreational opportunities such as hunting, fishing, and wildlife viewing available to the public?
- Is the installation's natural resources team adequately resourced to fully implement the INRMP?
- Is the installation's natural resources team adequately trained to fully implement the INRMP?

- Does the installation encourage retaining existing natural resources personnel to maintain corporate knowledge and manage resources with the most qualified professionals to support the military mission?
- To what extent are the installation's native ecological systems currently intact?
- In what ways are an installation's various habitats susceptible to change or damage from different stressors?
- What stressors affect each habitat type?
- To what degree (i.e., high, medium, or low) is the INRMP and its associated actions supporting the installation's ability to sustain the current and potential future military mission?

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