U. S. AIR FORCE

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

EGLIN AIR FORCE BASE
Florida

2022

(See INRMP signature pages for plan approval date)

ABOUT THIS PLAN

This installation-specific Environmental Management Plan (EMP) is based on the United States Air Force's (USAF) standardized Integrated Natural Resources Management Plan (INRMP) template. This INRMP has been developed in cooperation with applicable stakeholders, which includes Sikes Act cooperating agencies and/or local equivalents, to document how natural resources will be managed. Where applicable, external resources, including Air Force Instructions; Department of Defense Instructions (DoDI); USAF Playbooks; federal, state, and local requirements; Biological Opinions; and permits are referenced.

Certain sections of this INRMP begin with standardized, USAF-wide "common text" language that address USAF and Department of Defense (DoD) policy and federal requirements. This common text language is restricted from editing to ensure that it remains standard throughout all plans. Immediately following the USAF-wide common text sections are installation sections. The installation sections contain installation-specific content to address local and/or installation-specific requirements. Installation sections are unrestricted and are maintained and updated by the approved plan owner.

NOTE: The terms "Natural Resources Manager," "NRM," "Point of Contact" (POC), and "NRM/POC" are used throughout this document to refer to the installation person responsible for the natural resources program, regardless of whether this person meets the qualifications within the definition of a natural resources management professional in DoDI 4715.03, Natural Resources Conservation Program.

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DOCUMENT CONTROL

Standardized INRMP Template

In accordance with (IAW) the Air Force Civil Engineer Center (AFCEC) Environmental Directorate (CZ) Business Rule 08, EMP Review, Update, and Maintenance, the standard content in this INRMP template is reviewed periodically, updated as appropriate, and approved by the Natural Resources Subject Matter Expert.

This version of the template is current as of 06/26/2020 and supersedes the 2018 version.

Installation INRMP

Record of Review—The INRMP is updated no less than annually, or as changes to natural resource management and conservation practices occur, including those driven by changes in applicable regulations. IAW the Sikes Act and Air Force Manual (AFMAN) 32-7003, Environmental Conservation, the INRMP is required to be reviewed for operation and effect no less than every five years. An INRMP is considered compliant with the Sikes Act if it has been approved in writing by the appropriate representative from each cooperating agency within the past five years. Approval of a new or revised INRMP is documented by signature on a signature page signed by the Installation Commander (or designee), and a designated representative of the United States Fish and Wildlife Service (USFWS), state fish and wildlife agency, and National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS or NOAA Fisheries) when applicable (AFMAN 32-7003).

Annual reviews and updates are accomplished by the installation Natural Resources Manager (NRM), and/or a Section Natural Resources Media Manager. The installation shall establish and maintain regular communications with the appropriate federal and state agencies. At a minimum, the installation NRM (with assistance as appropriate from the Section Natural Resources Media Manager) conducts an annual review of the INRMP in coordination with internal stakeholders and local representatives of USFWS, state fish and wildlife agency, and NOAA Fisheries, where applicable, and accomplishes pertinent updates. Installations will document the findings of the annual review in an Annual INRMP Review Summary. By signing the Annual INRMP Review Summary, the collaborating agency representative asserts concurrence with the findings. Any agreed updates are then made to the document, at a minimum updating the work plans.

INRMP APPROVAL/SIGNATURE PAGES

Integrated Natural Resources Management Plan

Eglin Air Force Base, Florida

August 2022

This Integrated Natural Resources Management Plan has been prepared in accordance with regulations, standards and procedures of the Department of Defense and the United States Air Force in cooperation with the United States Fish and Wildlife Service, National Oceanic and Atmospheric Administration (NOAA), and Florida Fish and Wildlife Conservation Commission.

_____ _____

Randall D. Rowland
96th Civil Engineer Group
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Date

EXECUTIVE SUMMARY

As the largest forested military reservation in the United States (U.S.), Eglin Air Force Base (AFB) supports a multitude of military testing and training operations, as well as many diverse species and habitats. The purpose of the Eglin AFB INRMP is to provide interdisciplinary strategic guidance for managing these natural resources in support of the military mission in the land and water ranges of the AFB Military Complex, located in Santa Rosa, Okaloosa, Walton, and Gulf counties of northwest Florida and the Gulf of Mexico. The Eglin AFB INRMP integrates and prioritizes wildlife, fire, and forest management activities to protect and effectively manage the Complex's aquatic and terrestrial environments and ensure "no net loss" in the operational capability of these resources to support the Eglin AFB test and training missions.

The Natural Resources Section (NRS) for Eglin AFB is considered a mission-enabling organization through its sustainment of natural infrastructure and coordination of biological consultations for missions that occur across Eglin's 464,000 acres. The Eglin NRS has long been recognized as a leader in the DoD for its progressive and proactive approach to balancing mission activities with management of Eglin's natural resources. It has been selected as DoD's top Natural Resources program five times in the past 12 years and won the Air Force Thomas D. White award in 2011, 2019, and 2021. Eglin NRS was also selected as the 2010 and 2014 Secretary of Defense Environmental Award winner for Natural Resources Conservation Team. Awards, however, provide an incomplete picture of how the NRS serves the military mission.

Benefits of INRMP Implementation

Eglin NRS is a critical part of the 96th Test Wing (96 TW). The Commander's strategic planning team explicitly recognizes the vital role that sustainable natural infrastructure plays in developing the warfighter at Eglin AFB.

The holistic approach to the Eglin NRS ecosystem management has led to the proposed de-listing of the federally threatened Okaloosa darter (*Etheostoma okaloosae*) (a first for the DoD) and to surpassing the red-cockaded woodpecker ([RCW] *Dryobates borealis*) recovery goal of 350 breeding pairs set by the U.S. Fish and Wildlife Service (USFWS) for Eglin AFB. These tremendous achievements have been accomplished with no significant mission impacts while greatly improving future mission capabilities for Eglin AFB. Large expenditures of Air Force and range user resources (time, effort, and funds) are also recognized as partners in these accomplishments. The positive trajectories of these populations and the habitats on which they depend have facilitated the accomplishment of numerous high-profile short-suspense missions in the last two decades. Among those missions supported by proactive natural resource management include the 7th Special Forces Group (Airborne) (7 SFG[A]) beddown, Amphibious Ready Group/Marine Expeditionary Unit, Stand-off Precision Guided Missile, Massive Ordnance Air Blast, and Maritime Strike and Maritime Weapon Systems Evaluation Program.

The success of the Eglin AFB ecosystem management approach can also be measured by those rare species that have not become cause for concern on the Eglin Reservation. Eglin AFB has avoided designation of Critical Habitat (CH) on the reservation for several species. The Endangered Species Act (ESA) defines CH as "specific areas that contain physical or biological features essential to the species' conservation and that may require special management considerations or protection." CH designations were avoided for the federally protected reticulated flatwoods salamander ([RFS] *Ambystoma bishopi*), red knot (*Calidris canutus rufa*), and loggerhead sea turtle (*Caretta caretta*), specifically due to the protections articulated in the Eglin AFB INRMP. Similarly, certain rare endemic species found primarily on Eglin AFB lands, such as the Florida bog frog (*Rana okaloosae*) and Santa Rosa beach mouse (*Peromyscus polionotus leucocephalus*), have avoided federal listing due to Eglin's exemplary stewardship ethic and management approach.

As detailed above, INRMP implementation activities result in many significant, positive outcomes, both for natural resources and for the mission. Some of these management activities, however, may cause auxiliary negative impacts such as prescribed fire damage to RCW trees. These activities are consulted on with the USFWS to determine methods to minimize the likelihood of negative effects; these are included in Section 7. Fortunately, these impacts are rare, and the overall beneficial effects more than offset the occasional unintended adverse impacts of INRMP activities.

To maintain flexibility and meet its dynamic mission, Eglin AFB was the first installation to institute annual updates to the INRMP, involving mission planners and regulators in a continuous planning cycle which results in a "living" INRMP process rather than a static INRMP document. This frequent coordination maintains strong relationships among natural resource personnel, regulators, and mission operators, as each group contributes to the direction of natural resource management in support of mission sustainability and compliance with federal law. Including mission planners in development of objectives, projects, and strategic direction of natural resource management contributes greatly to a better understanding of the mission needs at the outset and allows for deliberation about how to best meet stewardship obligations without impacting the test and training mission.

Because recovery after failure makes for a great news story about redemption, steady and reliable programs like those at Eglin AFB receive much less attention. The reality, however, is that Eglin's natural resources (NR) program is a true success, consistently providing sound stewardship and facilitating the uninterrupted accomplishment of the military mission.

Strategic Priorities

The strategic priorities of the Eglin NRS are reflected in the five principal natural resources management goals of this INRMP, as listed below.

- Provide direct support and natural resources coordination services to Eglin AFB by planning for and adapting to a rapidly changing military mission.
- Enable long term sustainability of Eglin AFB environments for military testing/training by protecting, sustaining, and monitoring rare and protected species across the base.
- Sustain habitat integrity, functionality, and productivity by managing invasive plants and animals, continuing a robust and nation-leading fire program, and maintaining a highly productive and effective forestry program.
- Restore, protect, and monitor wetlands, aquatic habitats, and watersheds to comply with federal law and maximize mission access and flexibility.
- Provide a variety of use, values, products, and services to present and future generations while maintaining sustainable ecosystems.

Due to the size and complexity of Eglin AFB and its INRMP, Component Plans (CPs) were produced for each major program within Eglin. These goals do not represent a significant change in the management direction for the Eglin Military Complex; however, changes in the mission, most notably the beddown of the 7 SFG(A) and the Joint Strike Fighter (JSF), have influenced the specifics of how these goals are accomplished. Effective coordination with new and current mission personnel is vital to achieving these INRMP goals and enabling the success of the military mission.

CPs describe the day-to-day operations and projects of each program in greater detail than in the main body of the INRMP. These CPs are part of the overall INRMP, included as electronic appendices, and should be used by reviewers and partners to find additional information on each program. Each CP is archived

annually in eDASH at the time of the annual INRMP update. The CPs, however, are considered “living documents” and are continually updated by NR personnel on the Eglin network; hyperlinks to the CPs are provided within this INRMP (requires Eglin computer access). Should a reviewer require additional information, contact the Eglin NRS chief.

1.0 OVERVIEW AND SCOPE

This INRMP was developed to provide for effective management and protection of natural resources. It summarizes the natural resources present on the installation and outlines strategies to adequately manage those resources. Natural resources are valuable assets of the USAF. They provide the natural infrastructure needed for testing weapons and technology, as well as for training military personnel for deployment. Sound management of natural resources increases the effectiveness of USAF adaptability in all environments. The USAF has stewardship responsibility for the physical lands on which installations are located to ensure all natural resources are properly conserved, protected, and used in sustainable ways. The primary objective of the USAF natural resources (NR) program is to sustain, restore, and modernize natural infrastructure to ensure operational capability and no net loss in the capability of USAF lands to support the military mission of the installation. The plan outlines and assigns responsibilities for the management of natural resources, discusses related concerns, and provides program management elements that will help to maintain or improve the natural resources within the context of the installation's mission. The INRMP is intended for use by all installation personnel. The Sikes Act is the legal driver for the INRMP.

1.1 Purpose and Scope

The purpose of this INRMP is to provide interdisciplinary strategic guidance for natural resources management on the 724-square-mile Eglin Military Complex (the mainland Reservation, Santa Rosa Island [SRI], and Cape San Blas [CSB]) from 2022 to 2026. The INRMP integrates and prioritizes wildlife, fire, and forest management activities to sustain and restore Eglin AFB aquatic and terrestrial ecosystems and ensure "no net loss" in the operational capability of these resources to support the Eglin AFB test and training mission. To ensure that natural resources management and other mission activities are integrated and in agreement with federal mandates, the INRMP is prepared in cooperation with the USFWS, NOAA Fisheries, the Florida Fish and Wildlife Conservation Commission (FWC), and other pertinent groups and agencies.

1.2 Management Philosophy

The INRMP serves as a key component of the Installation Development Plan, which provides background and rationale for the policies and programming decisions related to land use, resource conservation, facilities and infrastructure development, and operations and maintenance to ensure that they meet current requirements and provide for future growth (USAF 2013f). The INRMP supports the mission by identifying the natural resources present on the installation, developing management goals for these resources, and integrating these management objectives into the military requirements for mission operations/support and regulatory compliance to minimize natural resource constraints.

This INRMP outlines the steps needed to fulfill compliance requirements related to natural resources management and fosters environmental stewardship. It is organized into the following principal sections.

- Section 1—INRMP overview, scope, authority and relationship to other plans.
- Section 2—Installation background, biotic and abiotic resources, and mission impacts to natural resources.
- Sections 3-6—Administrative details of INRMP and natural resources management, including staff training and records management.
- Section 7—Natural Resources Programs at Eglin AFB and details of current management.
- Section 8—Goals, Objectives, and Projects planned for the next five years.
- Section 9—INRMP review/update and implementation process.
- Section 10—Work plans for the next five-year cycle.

- Sections 11-13—End matter including references and acronyms.
- Sections 14-15—Appendices, component plans, and associated plans.

1.2.1 Interdisciplinary INRMP Development

The INRMP was developed using an interdisciplinary approach and is based on existing information of the physical and biotic environments, mission activities, and environmental management practices at Eglin AFB. Information was obtained from a variety of documents, interviews with installation personnel, on-site observations, and communications with both internal and external stakeholders. Coordination and correspondence with these organizations and agencies is documented and satisfies a portion of the requirements of 32 Code of Federal Regulations (CFR) 989—Environmental Impact Analysis Process (EIAP).

Goals and objectives require monitoring on a continuous basis and management strategies are updated whenever there are changes in mission requirements, adverse effects to or from natural resources, or changes in regulations governing management of natural resources. Updates of the INRMP are coordinated through a planning team that includes members from each of the NR groups and various Test Wing (TW) offices, such as Range and Airspace Sustainment. These groups work together on developing and updating goals and objectives and specific sections of the INRMP through a series of meetings. Once internal coordination and review of the INRMP is complete, it is provided to the USFWS, NOAA Fisheries, and FWC for review and signature. The signature of these agencies reflects their mutual agreement on those portions of the INRMP within the scope of the agency's authority.

1.2.2 Ecosystem Management

The principles of ecosystem management and biodiversity conservation serve as the foundation of the INRMP. The goal of ecosystem management is to preserve and enhance ecosystem integrity. Over the long-term, ecosystem management will improve the sustainability and biological diversity of terrestrial and aquatic ecosystems while supporting sustainable economies and communities. These principles further enable military mission success through sound stewardship and ensure continued access to land and airspace required to accomplish the Air Force mission. In applying the principles and guidelines for DoD ecosystem management, Eglin AFB will

- maintain or restore the sustainability and biological diversity of native ecosystems where practical and consistent with the military mission;
- maintain or restore ecological processes such as fire and other disturbance regimes where practical and consistent with the military mission;
- maintain or restore hydrological processes in streams, floodplains, and wetlands when feasible;
- support sustainable human activities, such as outdoor recreation and harvesting of forest products, provided this use does not cause long-term ecosystem damage or negatively affect the military mission; and
- collaborate with other DoD components, pertinent agencies, and adjacent landowners to implement ecosystem management on the installation.

The key operational steps that Eglin AFB is employing for ecosystem management include (1) inventorying of ecologically significant components of the landscape, (2) conservation planning to divide the landscape into manageable conservation units and to assess threats, (3) identification of uncertainties related to these units to be addressed through research, (4) monitoring the effects of management operations to quantify success and identify unanticipated problems, (5) creating a decision-support structure to ensure informed

management decisions, and (6) developing partnerships beyond Eglin's borders to improve conservation effectiveness.

1.2.3 Stewardship and Compliance

The long-term sustainability of Eglin's natural resources depends on a combination of stewardship and compliance. Stewardship centers on habitat protection and recovery, whereas compliance focuses on conforming with laws and regulations. The primary NR stewardship responsibility at Eglin AFB belongs to NR, but other civil engineering, testing, and training organizations also may serve in a stewardship role. INRMP implementation focuses primarily on stewardship activities, including prescribed burning, native forest restoration, invasive non-native species (INS) control, erosion control and restoration projects, many of which support the sustainment and recovery of rare and protected species. Detailed information on NR stewardship activities is available in Section 7 and in the individual CPs.

NR compliance concentrates on following laws and regulations, including the ESA, Marine Mammal Protection Act (MMPA), National Environmental Policy Act (NEPA), and the Clean Water Act (CWA), among others. Many of these laws and regulations require pre-activity consultation and analysis of impacts, and often result in compliance requirements for activities with the potential to cause environmental impacts, such as certain construction and mission activities. Although NR, Environmental Impact Analysis, or other Eglin AFB environmental organizations may conduct the analysis or consultation, compliance responsibility and liability belongs to the proponent organization; failure to comply with the law may result in criminal and civil penalties and have a negative effect on overall mission capabilities. Details on compliance are provided in Section 6—Recordkeeping and Reporting and Section 7—Natural Resources Program Management.

1.3 Authority

The Sikes Act, 16 United States Code (U.S.C.) § 670a, requires an INRMP be written and implemented for all DoD installations with significant natural resources. The USAF NR program ensures continued access to land, air, and water resources to conduct realistic military training and testing, as well as to sustain the long-term ecological integrity of the resource base.

This INRMP is developed under, and proposes actions IAW, applicable DoD and USAF policies, directives, and instructions. AFMAN 32-7003 provides the necessary direction and instructions for preparing an INRMP. Issues are addressed in this plan using guidance provided under legislation, Executive Orders (EOs), Directives, and Instructions including DoDI 4715.03; Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*; Department of the Air Force Instruction (DAFI) 90-2002, I*nteractions with Federally Recognized Tribes*; and AFMAN 32-7003. DoDI 4715.03 provides direction for DoD installations to establish procedures for an integrated program for multiple-use management of natural resources. AFPD 32-70 discusses general environmental quality issues, including proper cleanup of polluted sites, compliance with applicable regulations, conservation of natural resources, and pollution prevention. DAFI 90-2002 provides guidance on interactions with federally recognized tribes and their cultural significance to natural resources. Installations must inform tribes of the content of the natural resource program and provide opportunities to consult on and participate in the development of the INRMP. AFMAN 32-7003 provides guidance on the preservation of cultural resources at USAF installations, and DAFI 90-2002 requires that tribes with historic or cultural affiliations with lands and resources managed by the installation have opportunities to consult on and/or participate in the development and maintenance of the Integrated Cultural Resource Management Plan (ICRMP) and the INRMP (USAF 2013d).

Appendix A, Annotated Summary of Key Legislation Related to Design and Implementation of the INRMP summarizes key legislation and guidance used to create and implement this INRMP. Refer to that table for a complete listing of Air Force Instructions (AFIs), AFMANs, the Federal Register, and the U.S.C. to ensure that all applicable guidance documents, laws, and regulations are reviewed. Installation-specific policies, including state and local laws and regulations, are summarized in Table 1-1 below.

Table 1-1. Installation-specific policies (including state and/or local laws and regulations).

Eglin Air Force Base Instruction 13-212	Range Planning and Operations
68A-15.063, Florida Administrative Code (F.A.C.)	Eglin Air Force Base is designated as a Florida Wildlife Management Area which enables Eglin-specific rules and regulations to be codified into the F.A.C.
62-330.449, F.A.C.	Requirements for Environmental Resources Permit from the Northwest Florida Water Management District
62-621, F.A.C.	Requirements for National Pollutant Discharge Elimination System (NPDES) and Non-NPDES generic permits

1.4 Integration with Other Plans

INRMP revisions and concurrence with the final plan must be coordinated through the installation chain of command and the 96th Security Forces Squadron (96 SFS), 96 Range Group, 96 Operations Group, Wing XP office, Legal, and Public Affairs. The NR Chief must ensure that the INRMP, ICRMP, Comprehensive Environmental Response, Compensation, and Liability Act/Resource Conservation and Recovery Act cleanup plans, Bird/Wildlife Aircraft Strike Hazard (BASH) plan, Integrated Pest Management Plan (IPMP), Grounds Maintenance contract, Air Installation Compatible Use Zone (AICUZ) studies, and any other plans that may affect natural resources, are mutually supportive and not in conflict.

- Activities implemented as part of the INRMP are considered in the Installation Development Plan, both for how natural resources impact development and how development impacts natural resources (USAF 2013f).
- The INRMP integrates with and supports the installation AICUZ program by describing NR management activities that support both NR and AICUZ goals, such as buffers that benefit wildlife and provide noise attenuation and crash areas (USAF 2006).
- The INRMP and the BASH Plan both cover bird/wildlife management activities, such as habitat management and wildlife relocation, to minimize potential aircraft strikes.
- The INRMP and the IPMP detail efforts to control pest animal and plant species that benefit both the mission and natural resources, including control of feral animals and invasive non-native species.

The INRMP and Comprehensive Range Plan (CRP) include discussions of how natural resources impact range operations and how range operations impact natural resources. Strategies for natural resources are included in the CRP.

2.0 INSTALLATION PROFILE

Office of Primary Responsibility	The 96th Civil Engineer Group, Environmental Management Branch, Natural Resources (NR) Section, has overall responsibility for implementing the NR Management program and is the lead organization for monitoring compliance with applicable federal, state, and local regulations
Natural Resources Manager/Point of Contact (POC)	Bruce Hagedorn; Bruce.hagedorn@us.af.mil; (850) 882-8391
State and/or local regulatory POCs (For United States, bases, include agency name for Sikes Act cooperating agencies)	• United States Fish and Wildlife Service (USFWS), 850-769-0552 • National Marine Fisheries Service (NMFS), Southeast Regional Office, 727-824-5312 • NMFS Office of Protected Resources, 301-427-8400 • Florida Fish and Wildlife Conservation Commission, 850-265-3677 • Florida Department of Environmental Protection, 850-595-8300 • Northwest Florida Water Management District, 850-539-5999
Total acreage managed by installation	464,000
Total acreage of wetlands	65,350
Total acreage of forested land	346,430
Does installation have any Biological Opinions? (If yes, list title and date, and identify where they are maintained)	• Eglin Gulf Test and Training Activities FPR-2016-9151 • Eglin Maritime Strike Operations Tactics Development and Evaluation. NMFS SER-2014-14835 • State Road (SR) 87 Widening/Construct New Yellow and Dead River Bridge; USFWS Log#2013-F-0033 • SR 123 Widening; USFWS Log# 2012-F-0015-R001 • Mid-Bay Bridge Connector Road USFWS Log# 2008-F-0230 • Eglin Indigo Snake Programmatic Biological Opinion; FWS Log No 2008-F-0201 • Santa Rosa Island Testing and Training Activities Biological Opinion; USFWS Log No. 2012-F-0048 • Red-cockaded Woodpecker Programmatic Biological Opinion; USFWS Log No. 04EF3000-2013-F-01431 • Precision Strike Weapons Test; NMFS SER-2004-00223 • Biological Opinions maintained on NR network drive at root\Wildlife\EIAP\ESA_Consultations
NR Program Applicability (Place a checkmark next to each program that must be implemented at the installation. Document applicability	☑ Fish and Wildlife Management ☑ Outdoor Recreation and Access to Natural Resources ☑ Conservation Law Enforcement ☑ Management of Threatened, Endangered, and Host Nation-Protected Species

and current management practices in Section 7.0)	☑ Water Resource Protection ☑ Wetland Protection ☑ Grounds Maintenance ☑ Forest Management ☑ Wildland Fire Management ☐ Agricultural Outleasing ☑ Integrated Pest Management Program ☑ Bird/Wildlife Aircraft Strike Hazard (BASH) ☑ Coastal Zone and Marine Resources Management ☑ Cultural Resources Protection ☑ Public Outreach ☑ Climate Vulnerabilities ☑ Geographic Information Systems (GIS)

2.1 Installation Overview

2.1.1 Location and Area

With 726 square miles of land area and airspace overlying 124,642 square miles of water ranges in the Gulf of Mexico, the Eglin Military Complex is one of the largest AFBs in the world and is the largest forested military reservation in the U.S. (Table 2-1, Figure 2-1, Figure 2-2, Figure 2-3). The main reservation is located within Santa Rosa, Okaloosa, and Walton counties in northwest Florida. Eglin AFB also manages a small parcel (962 acres) in Gulf County, Florida on the barrier islands (Cape San Blas). Eglin AFB's barrier islands include three land tracts, one in each of Santa Rosa, Okaloosa, and Gulf counties. The westernmost unit is known as SRI, which is 13 miles long and located in Santa Rosa and Okaloosa counties. This portion is very narrow (0.1–0.6 miles wide) and bounded on the south by the Gulf of Mexico and by Santa Rosa Sound on the north. It is relatively undeveloped with a few military structures. The central portion, known as Okaloosa Island, is four miles long and located in Okaloosa County. The eastern unit is known as CSB and comprises approximately 962 acres with three miles of beachfront. CSB is bounded on the south by the Gulf of Mexico and on the north by St. Joseph Bay. Approximately 14,000 acres of the total base are improved, 46,000 acres are semi-improved, and 405,000 acres are unimproved.

The size of the Eglin Reservation and its diversity of terrain and vegetative cover make it an ideal setting in which to conduct a variety of test and training operations. Environments include shoreline, rolling hills, dense forest, cleared flat expanses, and multiple water environments. The Eglin Reservation is adjacent to the Gulf of Mexico and has more than 50 distinct test areas/sites and approximately 440 tactical training areas (TTAs) (Figure 2-4 and Figure 2-5). This unique setting and overwater airspace combine to provide a sea-to-land transition area—a vital resource for modern weapons system research, development, testing, training, and evaluation. Additionally, multiple special operations groups and other ground training units use Eglin's vast interstitial areas and adjacent water assets.

Table 2-1. Installation/GSU location and area descriptions.

Installation/ Geographically Separated Unit (GSU)	Main Use/Mission	Acreage	Addressed in INRMP?	Describe Natural Resource Implications
Eglin Mainland	• Weapons system research, development, test, and evaluation • Training • Base and Reservation support	458,280	Addressed throughout INRMP	Mission and operational activities may cause direct physical impacts, harassment, and habitat impacts for plant and animal species, and may affect the ability of natural resources personnel to manage these resources due to access and safety restrictions. Alternately, mission activities also protect many species and habitats due to the management of buffer areas as natural forested areas and beach habitats.
Cape San Blas	• Weapons system research, development, test, and evaluation • Training	960	Addressed throughout INRMP	Potential NR implications are like those discussed for the Eglin Mainland.
Santa Rosa Island	• Weapons system research, development, test, and evaluation • Training	4,760	Addressed throughout INRMP	Potential NR implications are like those discussed for the Eglin Mainland.
Eglin Gulf Test and Training Range (EGTTR)	• Weapons system research, development, test, and evaluation • Training	102,000 sq. nm of Gulf of Mexico waters under EGTTR airspace	Addressed throughout INRMP	Mission activities may cause direct physical impacts, harassment, and habitat impacts for marine species.

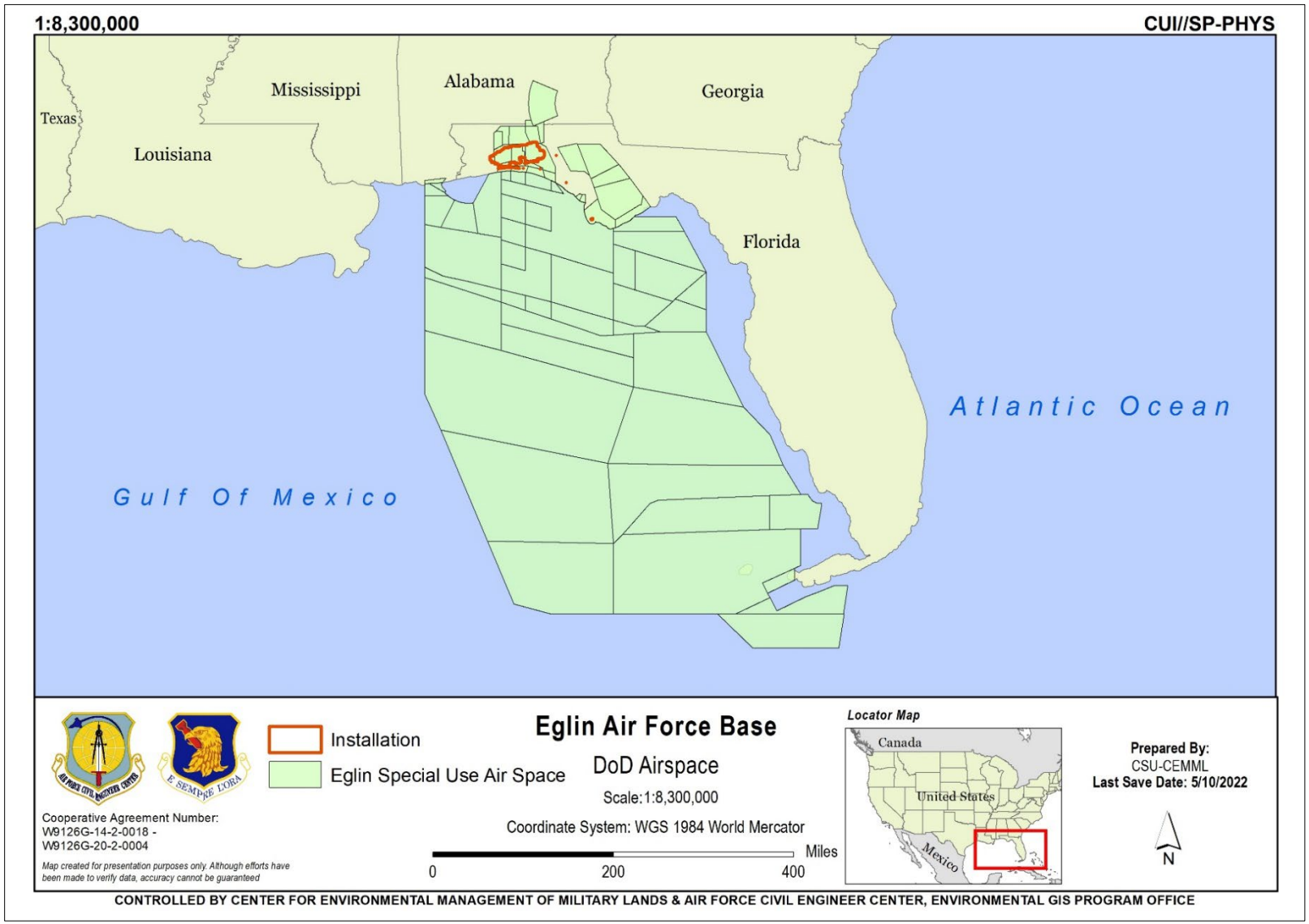

Figure 2-1. Overland and overwater Department of Defense (DoD) airspace.

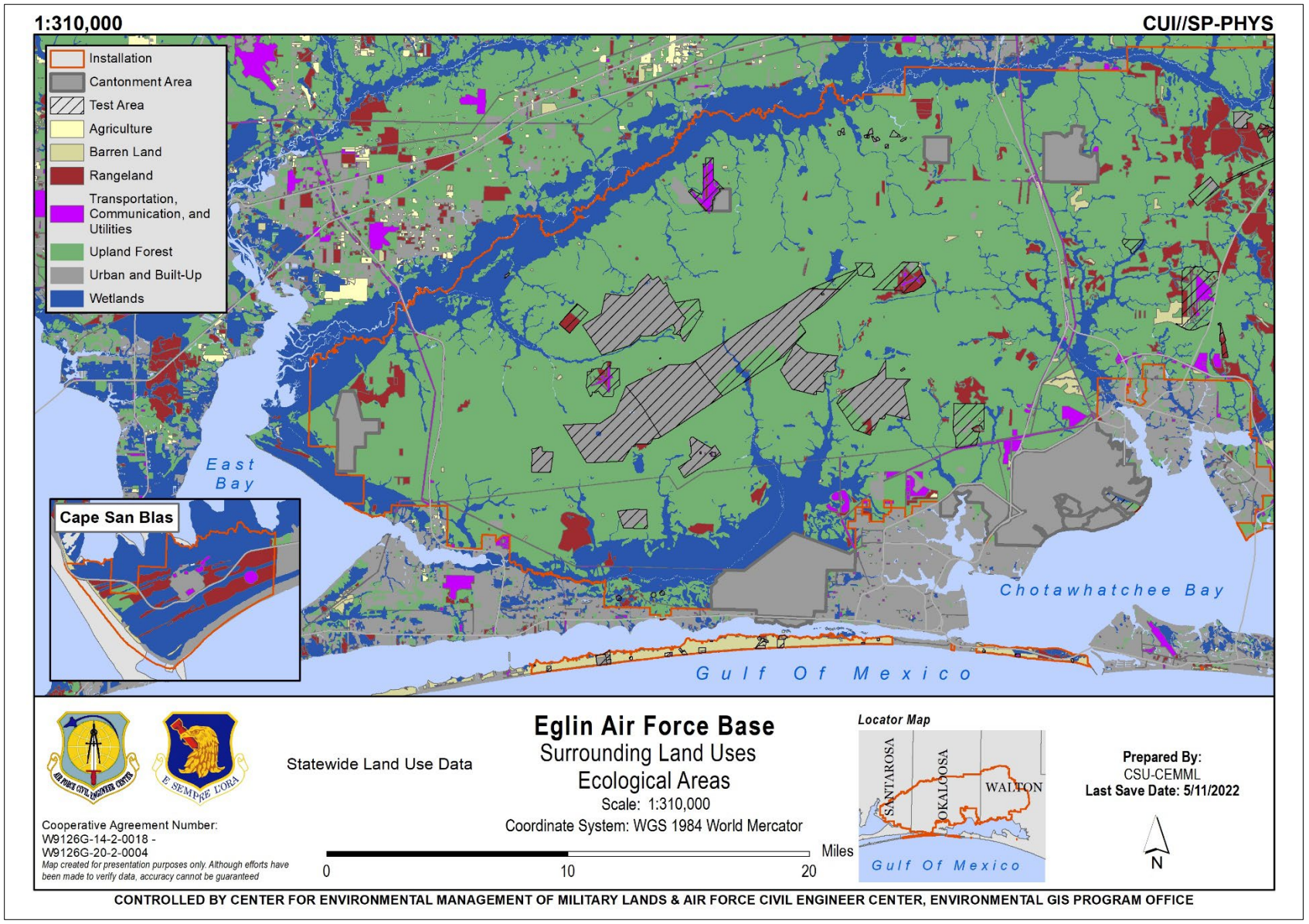

Figure 2-2. Land use and ecological areas surrounding Eglin Air Force Base (West).

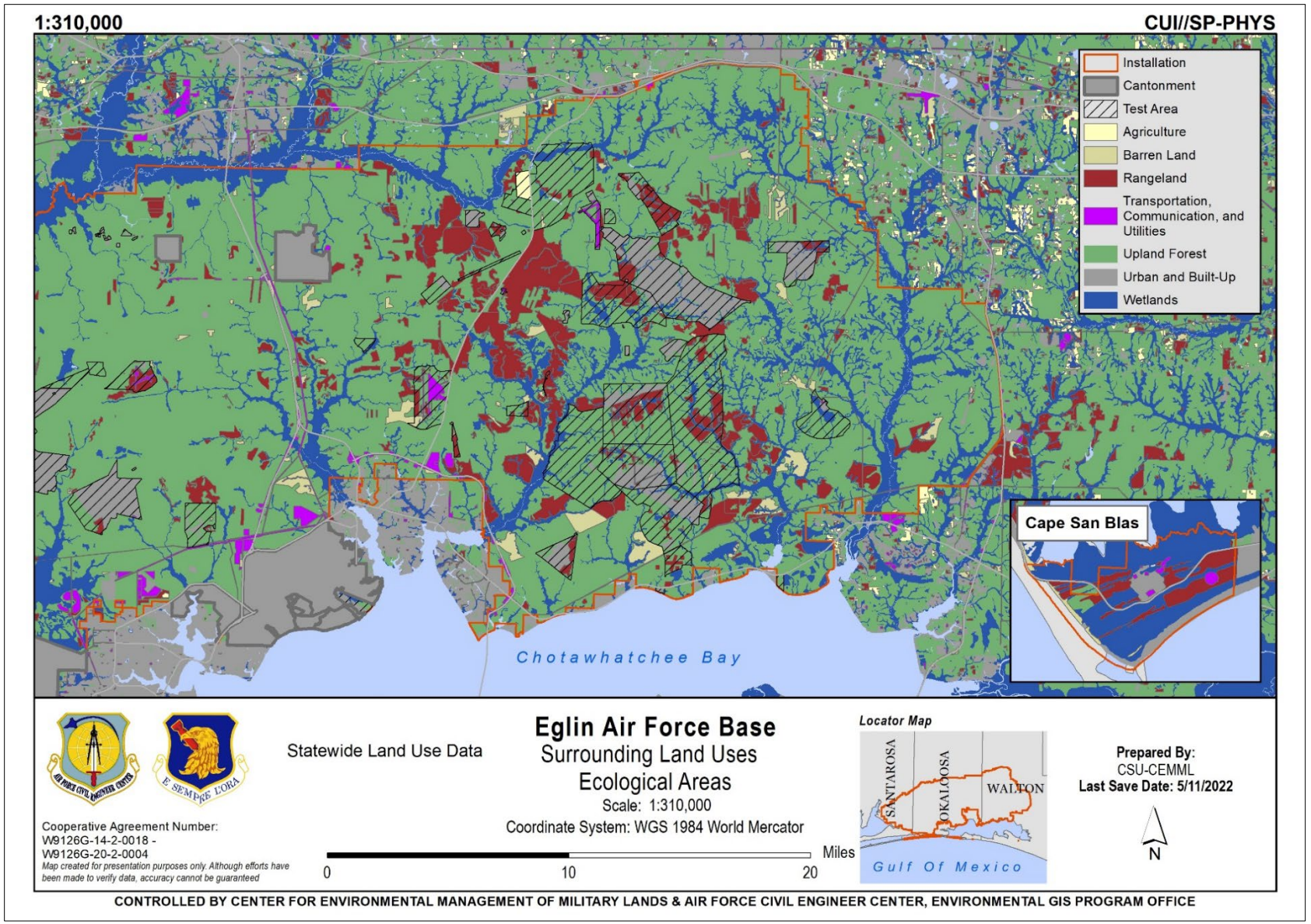

Figure 2-3. Land use and ecological areas surrounding Eglin Air Force Base (East).

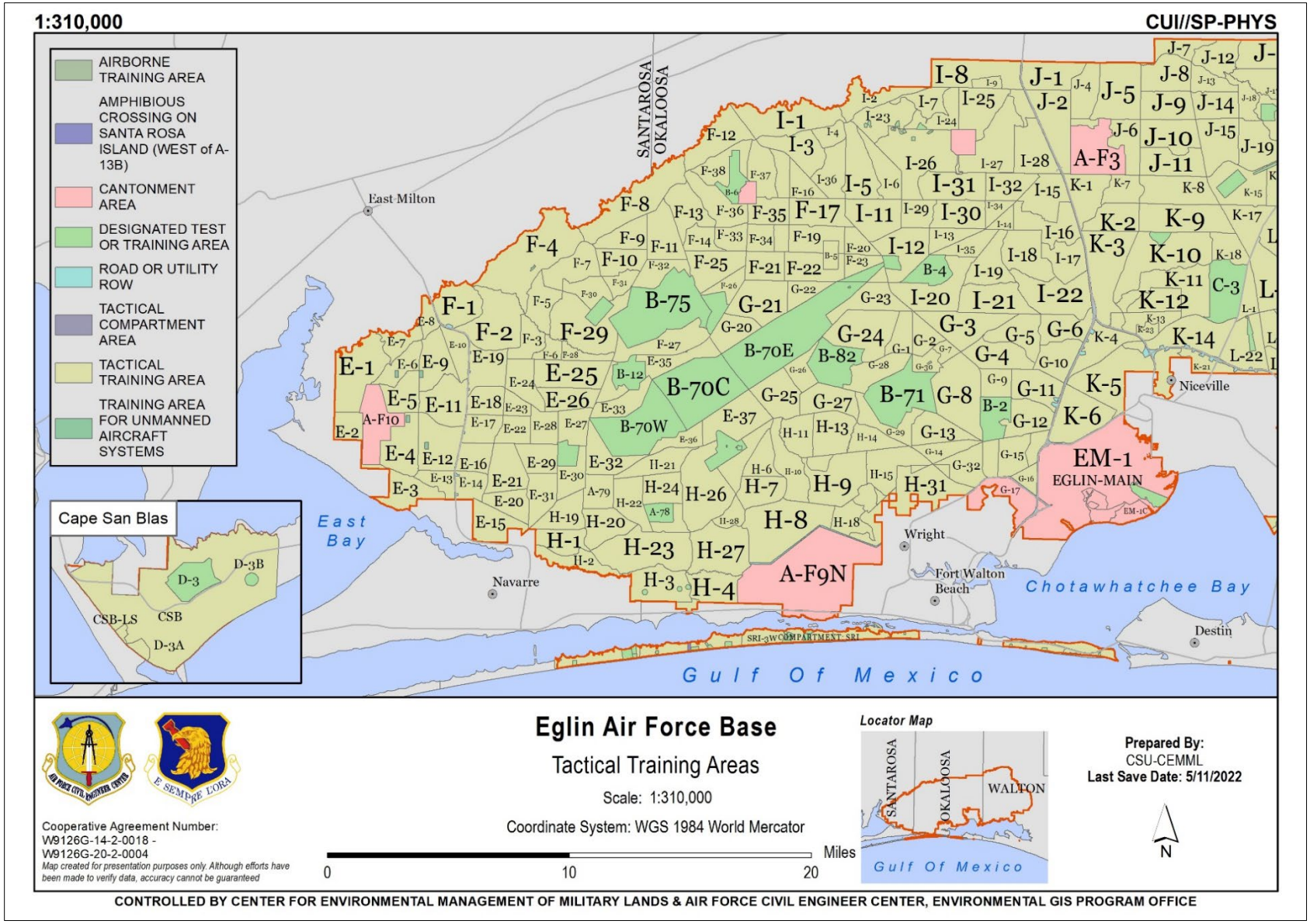

Figure 2-4. Tactical Training Areas (West).

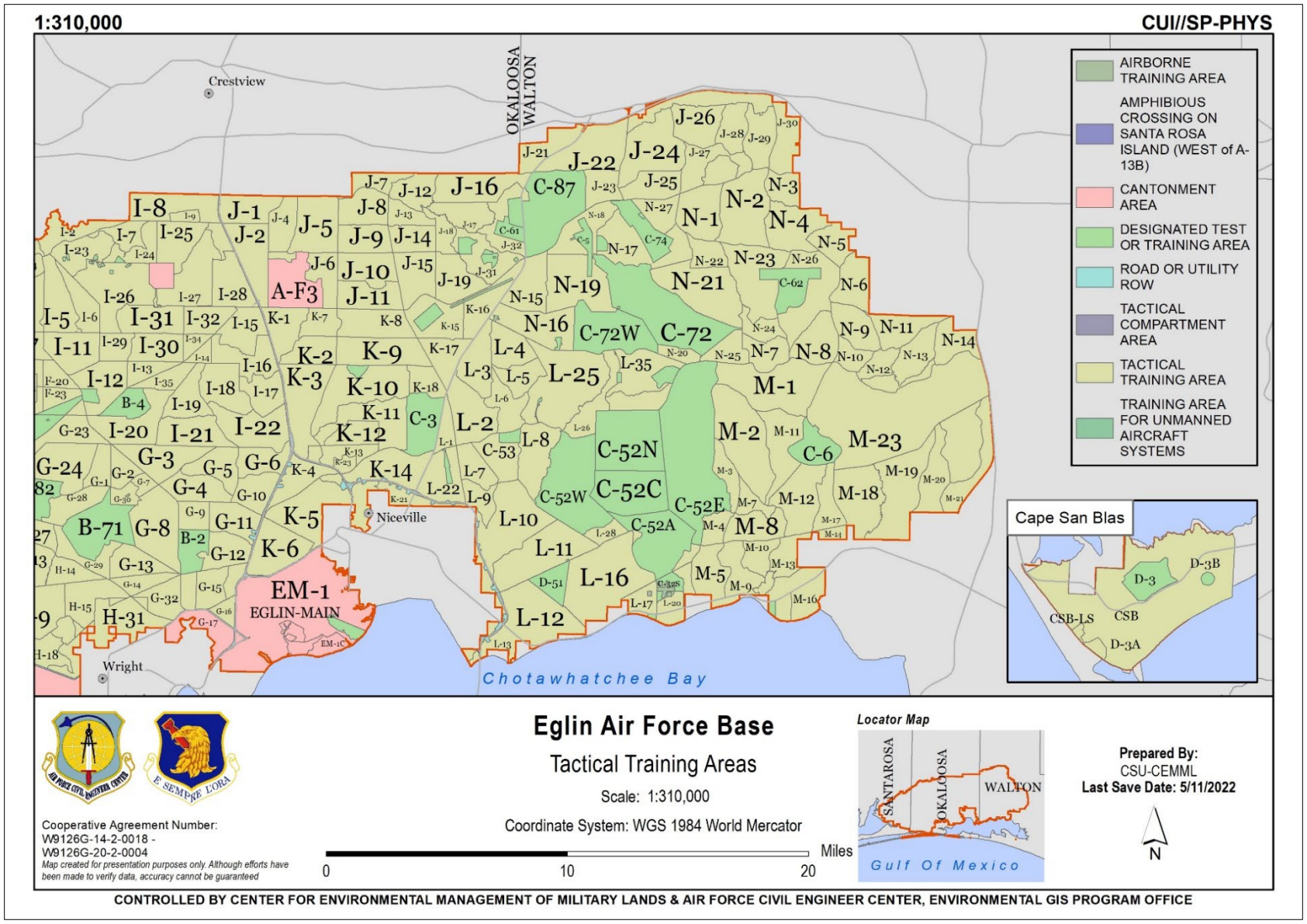

Figure 2-5. Tactical Training Areas (East).

2.1.2 Installation History

Prior to its designation as Eglin AFB, this land was under the management of the Choctawhatchee National Forest. It was established on 14 June 1935, as Valparaiso Bombing and Gunnery Base, but was soon renamed Eglin Field. In 1940, the U.S. Forest Service (USFS) ceded the 800 square mile Choctawhatchee National Forest to the War Department, and soon thereafter Eglin Field became a gunnery training site for Army Air Corps fighter pilots, as well as a major testing center for aircraft, equipment, and tactics, ranging from night reconnaissance techniques to destruction of underwater obstacles. After the end of World War II, Eglin activated the First Experimental Guided Missile Group, which developed the techniques for missile launching and handling, established training programs, and led in the development of drones. Then in 1949, the USAF established the Air Force Armament Center at Eglin, which for the first time brought development and testing together.

During the last half of the 1960s, the requirement to provide non-nuclear armament and conventional weapons changed the emphasis of Eglin's test mission to limited warfare capabilities, counterinsurgency, and combat effectiveness. The Eglin Test Range was used to support research and development testing, effectiveness testing of USAF weapons, chemical-biological munitions, electronic combat, and support of Special Forces training and tactics. The average number of major tests conducted per month at Eglin AFB went from 119 to 339. These efforts led to the development of "smart bombs," next generation air-to-air and air-to-ground missiles, and improved bombs with a hardened target kill capability.

In 1968, responsibility was centralized at Eglin for research, development, test and evaluation, and initial acquisition of non-nuclear munitions for the USAF. Over the next two decades, Eglin placed into production the precision guided munitions-laser, television, and infrared guided bombs; two anti-armor weapon systems; and an improved hard target weapon. Eglin AFB also was responsible for developing the Advanced Medium Range Air-to-Air Missile, which was developed jointly by the U.S. Navy and the USAF.

Eglin AFB was again re-designated in 1990 to become the Air Force Development Test Center. The Center provided test and evaluation support for development of conventional non-nuclear munitions, electronic combat systems, and navigation/guidance systems, and hosted some 50 associate units representing the USAF as well as the Army Ranger Training School, the Navy Explosive Ordnance Disposal School (NAVSCOLEOD), and a unit of the federal prison system.

In 1998, the Air Force Development Test Center mission was given a new designation as the Air Armament Center (AAC), which was responsible for all USAF armaments and was the Air Force Materiel Command's primary center for armaments. The AAC continued the role of managing the development, testing, procurement, and support of air-delivered weapons. The 2005 Base Realignment and Closure (BRAC) legislation designated Eglin AFB as an Air Integrated Weapons and Armaments Research, Development and Acquisition, Test and Evaluation Center, and mandated the transition of three new missions to Eglin AFB beginning in 2011—the Army 7 SFG(A), Defense Threat Reduction Agency (DTRA), and the JSF.

In July 2012 the AAC was redesignated and the Air Force Materiel Command realigned 12 centers to 5. Eglin's test mission became part of the Air Force Test Center at Edwards AFB, California. Eglin AFB's 96th Air Base Wing was redesignated the 96 TW with the previous 46th Test Wing transitioning to the 96th.

2.1.3 Military Missions

The Eglin Reservation is unique because of the depth and breadth of testing and training that occurs there. All phases of munitions life cycle support occur on the Eglin Reservation from research through

sustainment testing. Additionally, various operational units train on the Reservation. This interplay of units, all focused on ensuring our nation's security, generates a complicated synergism of activity on the Reservation. Mission activities at the Eglin Reservation today fall into three broad categories.

- Weapons system research, development, test, and evaluation
- Training
- Base and Reservation support

The 96 TW manages the Eglin Test and Training Complex's (ETTC) test and evaluation mission and oversees a variety of specialized test facilities at Eglin. The 96 TW is the Range Operating Authority of the ETTC (which consists of airspace, land, water, and frequency spectrum), one of the key Air Force components to the DoD Major Range and Test Facility Base (MRTFB). The MRTFB is a national asset composed of unique range and facility assets across the country tasked to support execution of the DoD research, development, test, evaluation, and acquisition mission. The 96 TW is the test and evaluation center for USAF air-delivered weapons, navigation and guidance systems, command and control systems, and Air Force Special Operations Command (AFSOC) systems. The wing provides expert evaluation and validation of the performance of systems throughout the design, development, acquisition, and sustainment process to ensure the warfighter has technologically superior, reliable, maintainable, sustainable, and safe systems. The 96 TW performs developmental test and evaluation across the complete system life cycle for a wide variety of customers, including Air Force Systems Program Offices; the Air Force Research Laboratory, logistics and product centers; major commands; other DoD services and U.S. government agencies (Department of Transportation, National Aeronautics and Space Administration, etc.); foreign military sales; and private industry.

Eglin AFB is the host to the NAVSCOLEOD, Army Ranger Training School (Jungle/Swamp Phase), 7 SFG(A), and the 20th Space Command. Eglin AFB provides ranges and airspace for AFSOC, and a variety of other test and training units. It is the home of the JSF Initial Joint Training Site, organized under the USAF's 33rd Fighter Wing. The ETTC provides an armament and multispectral test and training environment, which is a DoD-unique land-sea interface with contrasting background and clutter environments essential for munitions-seeker testing. The land is used for the testing, development, and evaluation of weapons systems and methods of warfare. The land is also used for live-fire ranges and military tactical maneuvers. There are five operational airfields within the Eglin Reservation. The land also provides tenant space for military operations, ranging from the NAVSCOLEOD at multiple sites on the Eglin Range complex to U.S. Army Ranger Training at Camp Rudder to the U.S. Coast Guard (USCG) Station on Santa Rosa Island, to name a few.

2.1.3.1 Hurlburt Field and Duke Missions

Hurlburt Field is the Headquarters (HQ) for AFSOC, which is the USAF component of U.S. Special Operations Command. AFSOC can be described as "America's specialized air power…a step ahead in a changing world, delivering special operations combat power anytime, anywhere." The command is committed to continual improvement to provide Air Force Special Operations Forces for worldwide deployment and assignment to regional unified commands to accomplish the following special operations activities: unconventional warfare, counter proliferation, direct action, psychological operations, special reconnaissance, civil affairs, combating terrorism, foreign internal defense, and information operations. Hurlburt's host unit, the 1st Special Operations Wing, is the oldest, largest, and most seasoned unit in AFSOC. The 919th Special Operations Wing, an air reserve component of AFSOC, fly multiple aircrafts

out of Duke Field. AFSOC units conduct air, ground, and water operations at Hurlburt Field, Duke Field, Eglin Reservation, Eglin Gulf Test and Training Range (EGTTR), and in the waters adjacent to SRI.

2.1.3.2 Camp Rudder—6th Ranger Training Battalion

The U.S. Army Ranger School is composed of the Ranger Training Brigade located at Fort Benning, Georgia, and three ranger training battalions that provide separate and distinct phases of Ranger training within various terrain and tactical environments. The third and final phase of training is conducted by the 6th Ranger Training Battalion (6RTB) on Camp James E. Rudder, Eglin AFB. Also known as the "Florida phase" or "swamp phase," this training exposes students to tactical operations in a coastal swamp environment. Students are trained in basic waterborne techniques, tactical river crossings, and urban operations. The 6RTB use the Yellow and East Bay Rivers, the Santa Rosa Sound, the near-shore Gulf of Mexico, and many interstitial TTAs in the northwestern portion of Eglin AFB. The 6RTB on Camp Rudder is composed of a battalion HQ, a HQ company, three companies of ranger instructors, various civilian and government contractors, and 25 service member families. The total population of the camp fluctuates between 350 and 650 government and civilian personnel and their families, depending on whether or not there is a ranger class in session. The Florida phase of training consists of an 18-day training cycle, executed 11 times each calendar year. Each cycle supports a student load of 150 to 300 students consisting of soldiers from all branches of the U.S. Armed Forces and other sovereign nations. Training is supported by battalion internal agencies (Logistics and Supply, Communications, Medical, Armory, Maintenance, Underwater Dive Team, etc.), contracted vehicle support from the government service agency, and two Light Utility Helicopters (LUH-72) or Utility Helicopters (UH-1) medical evacuation helicopters from an external post (i.e., Fort Polk, Louisiana). Each 18-day training cycle includes two to three airborne operations, four air assault operations, five waterborne operations, and two tactical river crossings. Training is conducted throughout the year in all weather conditions.

2.1.3.3 7th Special Forces Group (Airborne)

The 7 SFG(A) operates under the U.S. Army Special Forces Command, which, in turn, operates under the leadership and guidance of the U.S. Army Special Operations Command located at Fort Bragg, North Carolina. The 7 SFG(A) is an operational unit that must maintain a 24-hour state of readiness. The readiness posture is divided among the battalions; any one, and in some instances two, may be preparing to deploy, actually deployed, or re-training upon deployment return. This creates significant utilization among range assets to include firing ranges, maneuver space, frequency spectrum, and airspace. Maintaining this readiness posture requires the units to train day and night, often for more than 24 hours at a time. Range use is constant and consistent. The mission of the 7 SFG(A) is to plan and execute unconventional warfare, counter-terrorism operations, direct action, special reconnaissance, and foreign internal defense.

2.1.3.4 Naval School Explosive Ordnance Disposal (NAVSCOLEOD)

NAVSCOLEOD has a mission of providing all explosive ordnance disposal (EOD) common-type training under the purview of the Secretary of Defense and providing all EOD individual training in the continental U.S. of foreign military students. Additionally, under 31 U.S.C. 1535, NAVSCOLEOD provides training support to the Secret Service, the Federal Bureau of Investigation, the Central Intelligence Agency, the USCG, the Federal Aviation Administration, and other organizations designated by the Secretary of Defense. NAVSCOLEOD instructors are staffed by the Army, Marine Corps, Navy, and Air Force. NAVSCOLEOD conducts basic EOD and Advanced Improvised Explosive Device Disposal training, which occurs both in the classroom (at Test Site D-51) and in the field. Basic EOD training for all four Services begins with fundamental skills: explosives and explosive effects, ordnance identification, reconnaissance procedures, demolition procedures, and EOD unique tool sets. This is followed with

combined skills training which covers specific families of ordnance: grenades, landmines, rockets, projectiles, bombs, aircraft explosive hazards, missiles, dispensed munitions and payloads, improvised explosive devices (IEDs), chemical and biological weapons, nuclear weapons, and weapons of mass destruction. In addition, Navy students receive training in underwater search techniques, torpedoes, sea mines, miscellaneous underwater devices, and underwater ordnance exploitation. The Advanced Improvised Explosive Device Disposal training course primarily takes place at Test Area C-87. This course provides classroom, laboratory, and field training to diagnose, disable, contain, and dispose of sophisticated IEDs in varied environments, including battlefield operations, peacekeeping operations, and homeland defense.

Table 2-2. Listing of tenants and Natural Resources responsibility.

Tenant Organization	**NR Responsibility**
Naval School Explosive Ordnance Disposal	Eglin Wildland Support Module conducts prescribed burning on base. Tenants pay Eglin Wildland Support Module annually for wildfire support. The 96th Civil Engineer Group CEIEA provides Environmental Impact Analysis Process support; and consultation support the Endangered Species Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act; invasive and nuisance species management; protected species surveys/monitoring; natural resource compliance monitoring; small scale timber cuts.
6th Ranger Training Battalion	Same as above.
20th Space Command	Same as above.
HQ Air Force Special Operations Command	Same as above.
7th Special Forces Group (Airborne)	Same as above.

2.1.4 Natural Resources Needed to Support the Military Mission

Eglin NRS integrates and prioritizes wildlife, fire, and forest management activities to protect and effectively manage the Complex's aquatic and terrestrial environments to ensure long-term mission sustainability. Eglin NRS works with mission groups to address issues of mutual concern, such as management options to create desired testing/training conditions. The goal is to establish processes for information exchange and coordination to minimize conflicts and maximize the effectiveness of both mission and NR management activities.

The variety of missions conducted at the ETTC requires a diversity of natural environments. The testing, development, and evaluation of weapons systems and methods of warfare require open test areas and water ranges. Multiple mission types use the DoD-unique land-sea interface areas; NR ensures continued use of these areas by controlling erosion and minimizing conflicts with protected species in these sensitive habitats. Because of large safety footprints and noise issues, large buffer areas of natural vegetation must be maintained around test areas. It is necessary to ensure the fuel loads in forested areas around test areas

are kept low to prevent large wildfires from test activities. Armament and multispectral test and training require contrasting background and clutter environments. Military tactical maneuvers require natural vegetation to be managed for simulating various environments that may be encountered during deployments. Survival training missions benefit from the habitat and wildlife management conducted by Eglin NRS.

2.1.5 Surrounding Communities

2.1.5.1 Socioeconomics

The influence of Eglin AFB is distinguishable within a three-county region of influence (ROI) composed of Okaloosa, Santa Rosa, and Walton counties located in northwest Florida. Communities surrounding Eglin AFB include Holley/Navarre on the west side of the base; Crestview, north of the base; DeFuniak Springs and Freeport on the east side of the base; and Destin, Niceville, Fort Walton Beach, Navarre, and portions of SRI to the south. Eglin AFB supports an estimated workforce of 18,000 persons, and approximately 46,770 retirees and dependents (USAF 2021a). Hurlburt Field has approximately 8,250 active duty, 10,780 active duty dependents, and 1,800 civilians, while Duke Field has 1,200 reservists and 300 full-time civil service personnel (Okaloosa EDC 2011).

Since the 1930s, the areas surrounding Eglin AFB have continued to experience slow, steady growth, corresponding to the inception and continuance of military activities in the region. By the 1950s the region was also becoming a center for tourism. Between 1960 and 2020, the civilian population in the surrounding counties of Santa Rosa, Okaloosa, and Walton increased from approximately 106,000 to over 470,000 people (U.S. Census Bureau 2022). Okaloosa County is the most populous county in the ROI, followed by Santa Rosa County and Walton County. Between 2010 and 2020, Walton County experienced the highest annual growth rate (3.7 percent) of the three counties, with 2.4 percent and 1.7 percent for Santa Rosa and Okaloosa, respectively (U.S. Census Bureau 2022).

In Okaloosa County, future development is likely to be concentrated in the northern portion of the county, including the city of Crestview, because undeveloped land is limited in the southern portion of Okaloosa County where Fort Walton Beach, Valparaiso, and Niceville are located. The northern portion of Okaloosa County is rural with land available for the development of new subdivisions. In Santa Rosa County, growth pressure is extending into the unincorporated area of Navarre (Santa Rosa EDC 2022).

The socioeconomic stability of the Eglin Military Complex reflects the interdependencies of the three counties and Eglin. The military is the number one contributor for Okaloosa's economy with an overall economic impact of $9 billion annually (One Okaloosa EDC 2022). The communities of Cinco Bayou, Crestview, Destin, Fort Walton Beach, Mary Esther, Niceville, Shalimar, and Valparaiso have been identified as the communities most affected by base activities. In addition, the growth of Hurlburt Field and its activities have significantly affected the unincorporated areas of Navarre, Navarre Beach, and Holley.

2.1.5.2 Encroachment

Eglin is concerned with the encroachment of land/water use, both within the Reservation and outside, that are incompatible with military missions. Mature Eglin processes actively manage these areas of potential mission encroachment to sustain the mission capability of the MRTFB. There are five main compatibility concerns—noise, population density, height of objects, lighting, and the radio frequency spectrum (USAF 2013c). Eglin AFB's immediate range encroachment concerns are as follows.

- South of Choctaw Field (height of objects, population density, light pollution)
- North of Field 6 (height of objects, population density, light pollution, compatible land use)

- North of Duke Field (height of objects, population density, light pollution, compatible land use)
- Northeast and east of the Reservation (height of objects, population density, light pollution)
- Around Eglin Main Airfield (height of objects, population density, light pollution, compatible land use)

2.1.5.3 Regional Land Use

The land uses surrounding Eglin AFB are interrelated with the mission activities that occur on base. The ROI for land includes Eglin AFB, the counties of Okaloosa, Walton, Santa Rosa, and Gulf, and the local jurisdictions within these counties. The area south of Eglin AFB is primarily commercial and urban residential land. West, north, and east of Eglin AFB, land use is more rural and less constrained (Figure 2-6). Regional land use includes the following.

- **Recreation/Natural Resources Management Areas** — Multiple natural areas exist in close proximity to Eglin, with representative high-quality aquatic and terrestrial habitats. These areas include state forest land, numerous state recreation areas, national seashore, Wildlife Management Areas, water management district lands, as well as Girl Scout and Boy Scout camps.
- **Residential** — For many cities located along Eglin's southern boundary, urban residential (as well as commercial) development is limited to parcels existing within the urbanized areas (infill development). The remainder of the region is open to rural residential development.
- **Mixed Use** — Mixed use areas include a combination of residential, nonresidential, and commercial use, and are dispersed throughout areas surrounding the Eglin Reservation. A large tract of mixed-use area is located near the eastern portion of Destin between U.S. Highway 98 (State Road [SR] 30) and the Choctawhatchee Bay toward Walton County.
- **General Commercial** — Areas for conducting business activities for profit such as retail sales, services, and offices. Most areas designated for general commercial in the ROI are adjacent to major roads including SR 189, Lewis Turner Blvd., SR 188 (Racetrack Road), U.S. Highway 98, and SR 293.
- **Agriculture/Timber** — Major tracts of undeveloped land west, north and east of the base are owned by timber companies or used for agriculture.
- **Institutional** — Areas for civic, government, religious, or non-profit use such as government grounds, buildings, and activities; public and/or private schools, colleges; libraries, museums, public health facilities, etc.

In cases where land-use changes are proposed or taking place, (e.g., agricultural to residential), Eglin AFB organizations participate as key stakeholders in county and regional planning bodies to sustain the mission capability of the MRTFB. Future land use for most areas of the ROI consists primarily of agricultural, military, or preservation land use, except in established municipalities or along coastal areas. In these areas, urban (e.g., residential and commercial) land use is dominant. The ability to house a growing labor market, and provide jobs and civil infrastructure (hospital, schools, roads, etc.) will place increased pressure on Eglin AFB leadership to discover collaborative solutions to the inevitable encroachment.

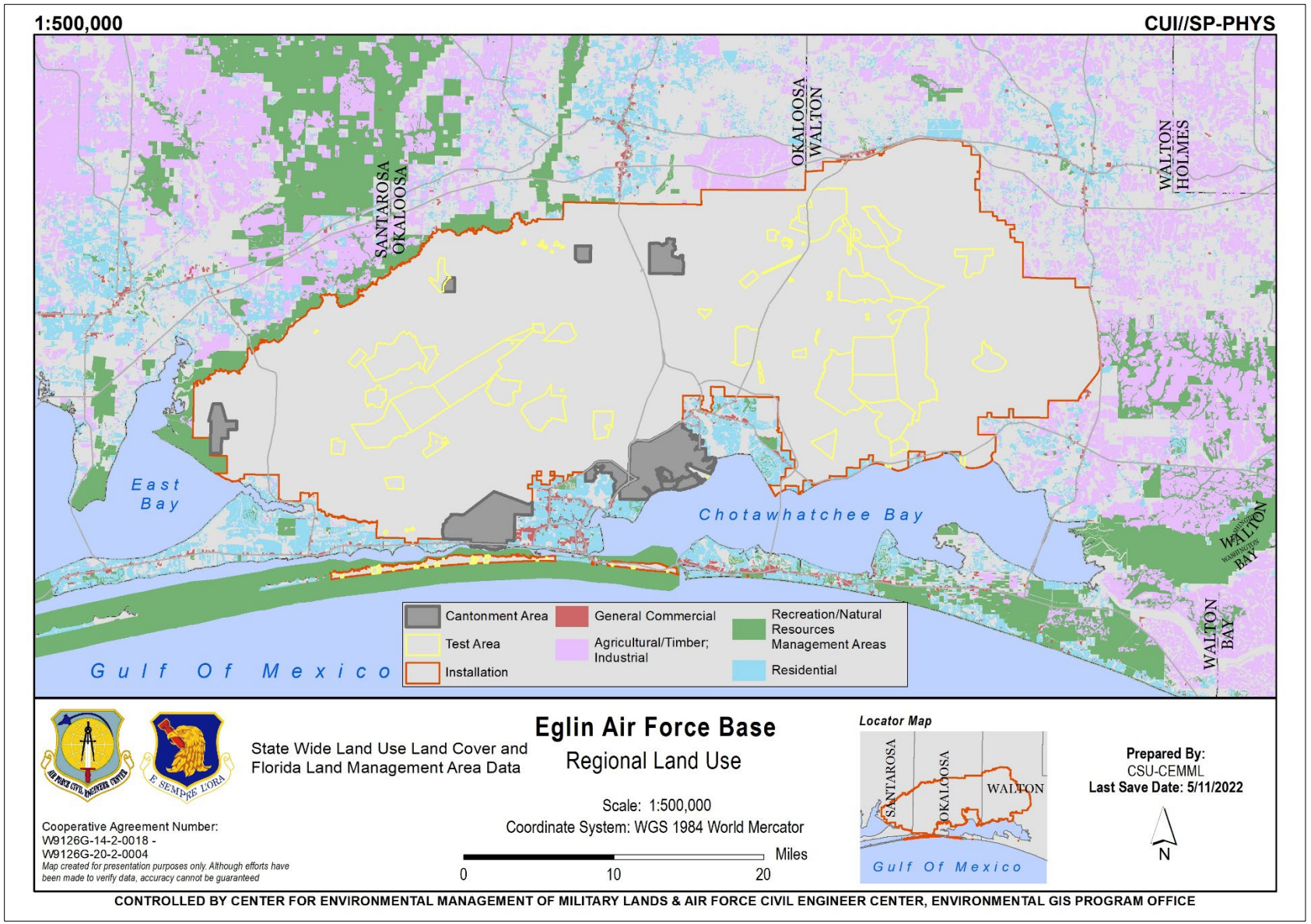

Figure 2-6. Regional land use.

2.1.6 Local and Regional Natural Areas

Eglin AFB is situated within a rare and rich species environment featuring numerous natural areas, such as parks, preserves, refuges, greenways, and river corridors in the surrounding region. Many of these surrounding areas contain habitat like that found on the installation, including sandhills, flatwoods, wetlands, streams, rivers, and barrier island habitats. These regional areas include those listed below.

- Blackwater River State Forest
- Blackwater River State Park
- Eden Gardens State Park
- Escribano Point Wildlife Management Area
- Fred Gannon Rocky Bayou State Park
- Garcon Point Water Management Area
- Grayton Beach State Park
- Gulf Islands National Seashore
- Henderson Beach State Park
- Lafayette Creek Wildlife Management Area
- Nokuse Plantation
- Point Washington Wildlife Management Area
- Topsail Hill State Park
- Yellow River Wildlife Management Area

2.1.6.1 Northwest Florida Greenway

The DoD, the state of Florida and The Nature Conservancy (TNC) have signed a Memorandum of Partnership to work together to preserve natural areas to help sustain this region's military, biodiversity, and recreational opportunities. The Northwest Florida Greenway Partnership targets land stretching from the Eglin AFB border to the Apalachicola National Forest (Figure 2-7). This Initiative is a partnership between military, government and nonprofit organizations to protect the Florida Panhandle's unique natural resources, economy, and military flyways. The primary method of accomplishing this goal is through the purchase of perpetual conservation easements. In March 2011, the Northwest Florida Water Management District acquired a 1,095-acre conservation easement in Nokuse Plantation, to the east of Eglin AFB with the help of a DoD contribution. In August 2011, the Florida Department of Environmental Protection (FDEP) acquired a 1,103-acre conservation easement in Nokuse Plantation, again the DoD will be contributing to this easement. This partnership will continue to pursue easement acquisition. Eglin AFB won the Association of Defense Communities 2011 DoD Installation of the Year award due in part to their participation in the Northwest Florida Greenway Initiative.

One of the major drivers and the main interest of the military in the Northwest Florida Greenway effort is the need for a location with enough special use airspace and surface area large enough to support realistic testing and training of long-range standoff weapons (LRSOW). The major requirement for LRSOW testing is a four to six-mile corridor along a 500-mile length of airspace. The area underneath the corridor must be relatively free of development and people. Furthermore, the entire test airspace and ground space must be available year-round without significant internal mission encroachment or external environmental, development, or recreational concerns. The establishment of the Greenway would create a significant opportunity to meet conservation and military needs; however, serious challenges exist, including strong public opposition, airspace reconfiguration, and real property acquisition.

2.1.6.2 Gulf Coastal Plain Ecosystem Partnership

The Gulf Coastal Plain Ecosystem Partnership (GCPEP) was formed in 1996 when large acreage landowners came together to conserve and restore the dwindling longleaf pine ecosystem and the unique aquatic resources of northwest Florida and south Alabama. Currently, GCPEP is facilitated by the Longleaf

Alliance and together the members operate under a multi-party Memorandum of Understanding (MOU) to help conserve more than 1.25 million acres. GCPEP includes the following partners.

- DoD (Eglin AFB, Naval Air Station Pensacola, Naval Air Station Whiting Field)
- FDEP (Coastal & Aquatic Managed Areas, and Recreation and Parks [Blackwater River State Park, Big Lagoon State Park, Perdido Key State Park, Tarkiln Bayou State Preserve])
- Florida Forest Service (Blackwater River State Forest, Pine Log State Forest, Point Washington State Forest)
- FWC
- National Park Service (Gulf Islands National Seashore)
- Northwest Florida Water Management District (NWFWMD)
- Nokuse Plantation
- The Longleaf Alliance
- TNC (Florida Chapter and Alabama Chapter)
- USFS (Conecuh National Forest)
- Westervelt Ecological Services
- Escambia County, Florida
- Resource Management Services, Inc.
- Gulf Power Company

To improve stewardship of natural resources and to increase management effectiveness, Eglin AFB works with these partners to exchange information, set conservation priorities, and implement cooperative conservation strategies at the landscape scale. GCPEP and its member partners have been instrumental in protection efforts to prevent future listings and in leading recovery efforts for many imperiled species. In addition, the GCPEP Ecosystem Support Team has played an important role in increasing prescribed burning acreage, invasive species control, and ecological monitoring at Eglin AFB and across the GCPEP landscape. GCPEP lands are shown in Figure 2-8.

2.1.6.3 Northwest Florida Sentinel Landscape

The Sentinel Landscape Program, founded in 2013, is a partnership consisting of federal agencies, state, and local governments, and other non-governmental agencies that cooperate with private landowners to pursue sustainable land management practices near military ranges and installations. This strategic partnership aims to strengthen military readiness by increasing climate change resilience, conserve natural resources, and support local agricultural and forestry economics.

To improve regional resilience and sustainability, retain working agriculture and forestry lands, protect natural resources and endangered species, and sustain the military mission, local, regional, state, and federal partners came together in 2022 to form the Northwest Florida Sentinel Landscape. Situated in Florida's panhandle, the unique coastal geography of the Northwest Florida Sentinel Landscape contains rural and agricultural lands, iconic longleaf pine forests, threatened and endangered species habitat, and nine key Department of Defense facilities: Eglin AFB, Tyndall AFB, Naval Air Station (NAS) Pensacola, NAS Whiting Field, Naval Support Activity Panama City, Eglin Gulf Test and Training Range, Hurlburt Field, Saufley Field, and Corry Station. These nine DoD installations and ranges are integral to military training, weapons testing, special operations, joint cyber warfare and aviation pilot training for USAF, Navy, Marine Corps and Coast Guard.

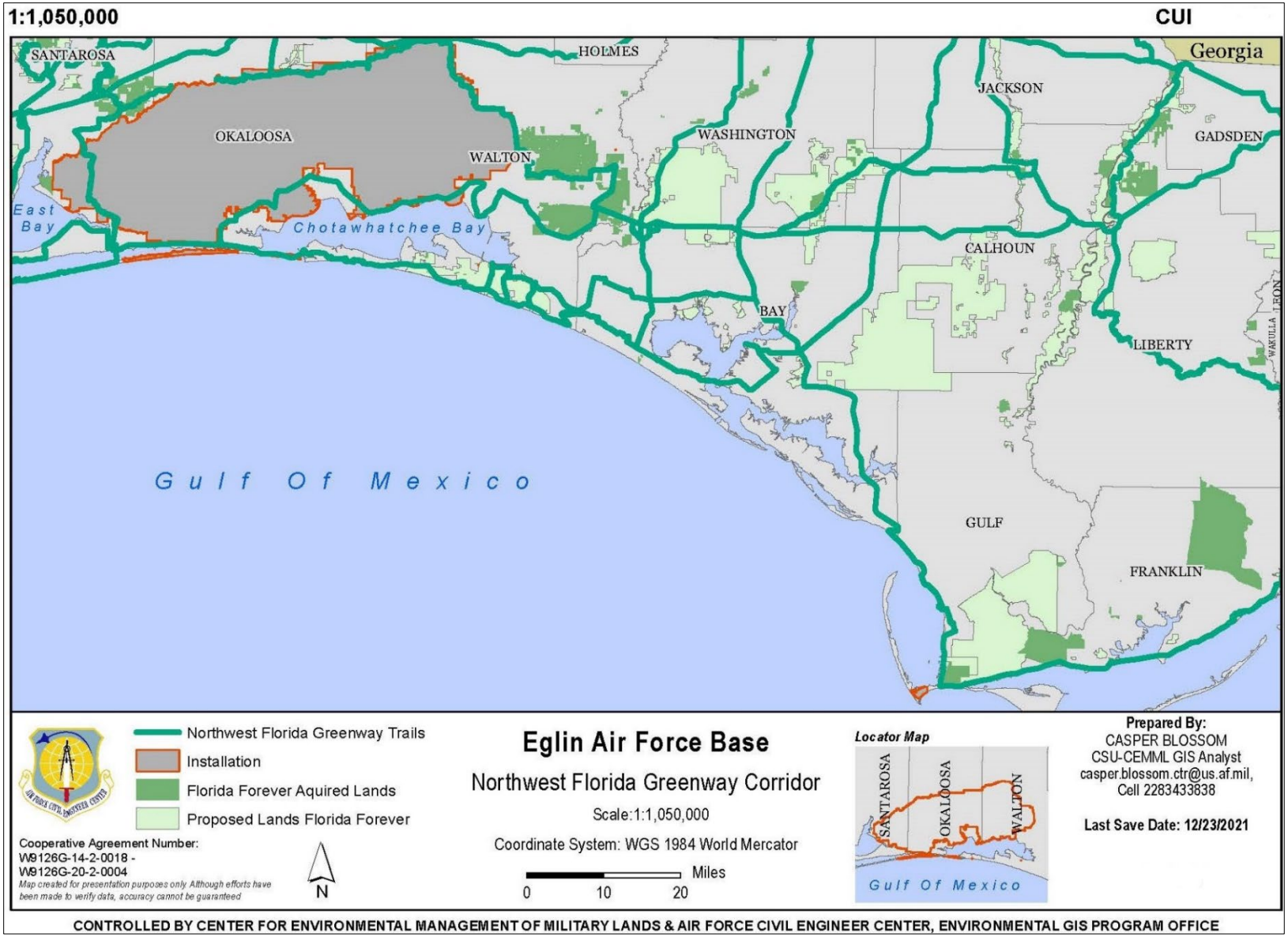

Figure 2-7. Northwest Florida Greenway corridor.

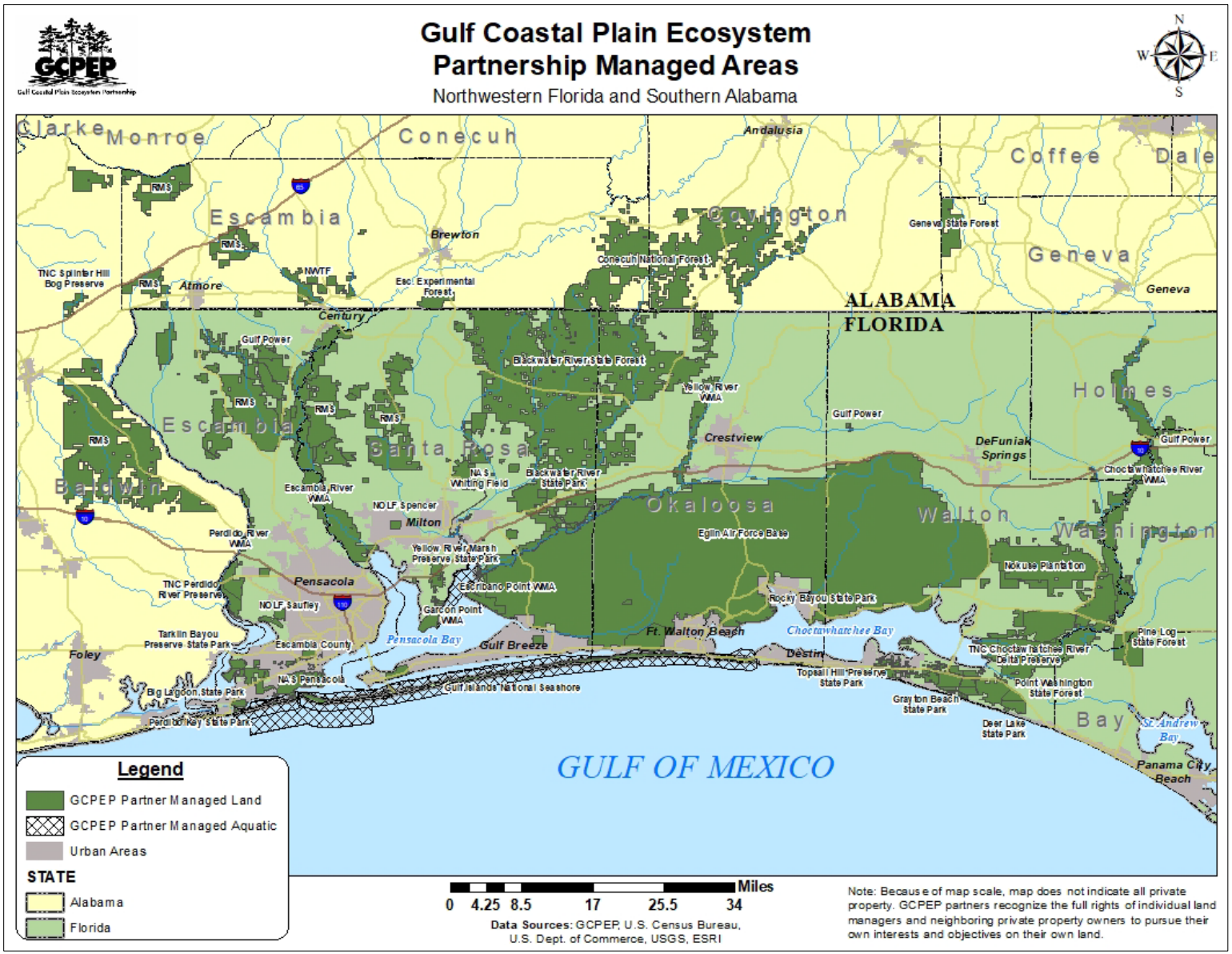

Figure 2-8. Gulf Coastal Plain Ecosystem Partnership (GCPEP).

As a coastal landscape, the Northwest Florida Sentinel Landscape faces increasing climate-related risks such as coastal erosion, flooding, and extreme storms, which can exacerbate existing natural resource and encroachment concerns. To increase the landscape's resiliency, mitigate coastal risks, and better adapt to the changing climate, the Northwest Florida Sentinel Landscape partners and stakeholders are working towards conserving and restoring habitat and water resources with an emphasis on listed species recovery, prescribed fire, and water quality and quantity.

2.2 Physical Environment

2.2.1 Climate

Eglin AFB has a subtropical climate characterized by humid, warm summers and mild winters. The Gulf of Mexico moderates both summer and winter temperatures at Eglin AFB. Just a few miles inland from the Gulf, however, this moderating effect no longer exists; thus, the northern part of the base has more of a continental climate than a subtropical one. Average yearly temperature is approximately 66 degrees Fahrenheit (°F) with a range from maximum average daily temperatures of near 90 °F in the summer to a minimum average of 40 °F in the winter (Table 2-3). Annual rainfall averages approximately 73 inches (1991–2020 normal) with most of this occurring during the month of August, and heaviest during the month of July. The least amount of rainfall occurs during the spring month of May. Extended periods of dryness can occur during fall, winter, and spring months most likely during La Niña phase of El Niño Southern Oscillation cycles (Rasmusson et al. 1983). During the summer months, the heaviest rainfall is usually from scattered showers and thunderstorms usually lasting only one or two hours (United States Department of Agriculture [USDA] 1995). Extended periods of dryness can occur during the winter months.

Table 2-3. Temperature (°F) and precipitation (inches) levels for Niceville, Florida, 2007–2019.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum Temperature	60	64	70	76	83	88	90	90	87	80	71	62
Mean Temperature	49	52	58	64	72	79	81	80	77	67	58	51
Minimum Temperature	37	40	46	52	61	69	71	71	67	55	46	40
Normal Precipitation	5.4	5.5	5.8	5.0	4.3	6.7	9.1	7.6	6.2	5.3	4.8	5.4

Prevailing winds are usually southerly during the summer with frontal passages, bringing cold air masses from the north during winters. The summer months have the lowest average velocity wind speed averaging around four miles per hour; however, during summer, a moderate sea breeze usually blows off the Gulf of Mexico, with occasional strong winds that come from thunderstorms (Winsberg 2003).

Relative humidity is high throughout the year. The temperature-humidity index reaches 79 by early June and stays between 79 and 81 during most of the afternoon hours until late September. At Eglin AFB, humidity and its potential effects are measured and quantified using the 96th Weather Squadron wet bulb globe temperature (WBGT), which has a real-time color flag alert system to indicate hazardous conditions. The WBGT use temperature, relative humidity, wind speed, and solar radiation to indicate heat stress to the human environment and is thus a more accurate indicator of human risk than temperature-humidity index.

Athletic activity guidelines indicate that WBGT values less than 80 are only hazardous to unconditioned athletes or during extreme exertion, while values over 90 are hazardous. Heat stress is one of the leading causes of injury and death as cited by OSHA, EPA, and NOAA (Occupational Safety and Health Administration 2017), and awareness of WBGT allows for mitigation such as water breaks, activity timing, and exertion limits.

Hurricane season runs from 1 June to 30 November, which peaks in September. The average return period is 9 years for hurricanes passing within 50 nautical miles of the Eglin AFB area; for major hurricanes (Category 3 or larger), the average return period for this same area is 22 years (NOAA 2011). Wind damage and flooding from both storm surge and rain are issues for the Eglin AFB area from tropical systems, and these types of storms are already increasing in both frequency and severity (Gilliam 2021). From 1850 to 2000, the North Atlantic generated 6.5 tropical cyclones per year, but from 2000 to 2020, there was an average of 15.1 per year. As sea surface temperatures increase and other factors governing cyclogenesis (the process of tropical cyclone formation) change, increasing numbers and severities of hurricanes may interact with sea level rise to cause additional damage each year.

Ground fog can occur during the fall, winter, and early spring months, either at night or during the early morning hours. The fog quickly dissipates as the sun comes out. Large hail (more than one-inch diameter) and winter precipitation (snow, sleet, freezing rain) are quite rare. Trace snowfall occurs a few times each decade (Winsberg 2003).

2.2.1.1 Climate Projections at Eglin AFB Air Force Base

Colorado State University (CSU) Center for Environmental Management of Military Lands (CEMML) generated site-specific climate projections for Eglin AFB under two future carbon-emission scenarios: Representative Concentration Pathway (RCP) 4.5 (a moderate emission scenario) and RCP 8.5 (a high emission scenario). CSU CEMML then used these projections to assess potential impacts of future shifts in climate on the natural resources at the base. Models used historical daily climate data recorded from 1980 through 2009 to represent average historical (i.e., baseline) conditions and generate climate projections. The historical daily climate data represent the 30-year historical reference point used by the Intergovernmental Panel on Climate Change (IPCC) to define climate change scenarios. Future climate conditions for Eglin AFB, assessed under both RCP 4.5 and RCP 8.5, were projected to produce two decadal time series of daily climate values for 2026–2035 and 2046–2055, represented hereafter as 2030 and 2050, respectively (CEMML 2019).

The CSU CEMML climate assessment was based primarily on publicly available data and data provided by AFCEC. The climate projections developed by CEMML (2019) were based on recent global climate model simulations developed for the IPCC Fifth Assessment Report, the IPCC Coupled Model Intercomparison Project Phase 5, and the U.S. National Center for Atmospheric Research Community Climate System Model (Hibbard et al. 2007; Moss et al. 2008, 2010; Gent et al. 2011; Hurrell et al. 2013).

2.2.1.2 Climate Model Results

Within each of the projected climate scenarios and for each variable projected are various sources of uncertainty relating to our knowledge of the processes involved. For instance, there is a range of possibilities for precipitation levels that depends on how the ocean and the atmosphere interact as conditions change, something that is not yet fully understood but known to be highly important. Interpretation of the four scenarios is complex but can be simplified by understanding that two emissions pathways and two timescales are depicted to demonstrate the differences that could result from changes in emissions quantities

and different lengths of time. Climate projections for Eglin AFB (CEMML 2019) indicate that minimum and maximum temperatures will increase over time under both emission scenarios (Table 2-4).

Table 2-4. Summary of climate data.

Variable	Historical	RCP 4.5		RCP 8.5	
		2030	2050	2030	2050
PRECIP (inches)	66.2	77.1	78.1	72.9	76.2
TMIN (°F)	56.8	58.7	59.3	58.7	60.2
TMAX (°F)	78.1	80.1	80.6	80.2	81.4
TAVE (°F)	67.5	69.4	69.9	69.4	70.8
GDD	6897	7475	7641	7467	7847
HOTDAYS	65.2	96.1	101.8	96.1	113.2
WETDAYS	4.3	2.3	3.1	2.4	3.3

Notes: TAVE=annual average temperature (ºF); TMAX=annual average maximum temperature (ºF); TMIN=annual average minimum temperature (ºF); PRECIP=annual average precipitation (inches); GDD= average annual accumulated growing degree days with a base temperature of 50 ºF; HOTDAYS=average number of days per year exceeding 90 ºF; WETDAYS=average annual number of days per year with precipitation of more than two inches in a day.

For the decade centered around 2030, both scenarios project a similar increase in annual average temperature (TAVE) of 1.9 °F over the historical average. The two emission scenario projections show higher warming by 2050, with RCP 4.5 associated with a warming of 2.4 °F and RCP 8.5 associated with a greater warming of 3.3 °F for this period. The number of HOTDAYS (days with temperature greater than 90 ºF) is projected to increase by 30–48 days depending on the scenario. This may limit the ability of personnel to work outdoors comfortably, decrease the attractiveness of some outdoor recreation activities, and affect plant, animal, and microbial activities in ways that can have cascading effects through ecosystems. These increases in high temperatures can even cause significant numbers of mortalities in the case of extreme heat events, which may become more common and more extreme compared to the historical baseline (Fischer et al. 2021).

For 2030, the RCP 4.5 scenario projects an increase in PRECIP of 16 percent while RCP 8.5 shows an increase of 10 percent. For 2050, RCP 4.5 projects an increase in PRECIP of 18 percent while RCP 8.5 shows a slightly smaller increase of 15 percent; however, due to the installation's position relative to moist air currents from the Gulf of Mexico and local topographic and land cover features, the installation is wetter and cooler than areas surrounding the facility, with usually more WETDAYS. In addition, climate models are generally poor at simulating extreme precipitation events in general and specifically in this region (Sun and Liang 2020, Zobel et al. 2018). Although general trajectories of temperature change projected by climate models are considered valid, the models are less able to capture Eglin AFB's local microclimatic precipitation regime. Examination of on-the-ground weather and precipitation data from Niceville (National Weather Service Station ID: USC00086240) and measurements collected by Eglin AFB depict a usually wetter and stormier pattern than is observed in the simulated model data. General seasonal precipitation patterns are similar across these two datasets, but local rainfall patterns exhibit higher peak rainfall intensity, higher rainy day occurrence, and higher occurrence of extreme rainfall events.

Recent trends from Jackson Guard data and Niceville, Florida, Weather Station data depict an upward trajectory in the incidence of WETDAYS and longer duration of intense storm events. Although global climate models do not currently have the capacity to project the extent of these changes into the future, the existing trends demonstrate the existing need for planners to consider the possibility of increased burden to infrastructure and ecosystems from extreme rainfall events, both in terms of heavy, 24-hour precipitation events and larger scale, long-duration extreme rainfall episodes (Figure 2-9).

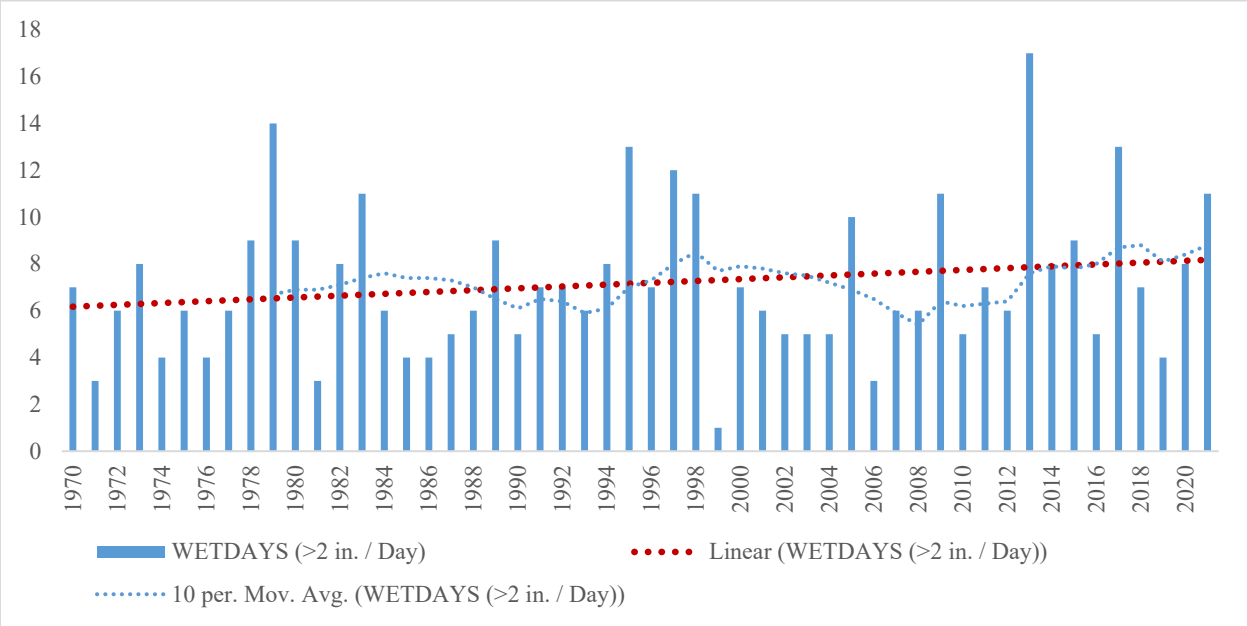

Figure 2-9. Average annual number of days with 2 inches or more precipitation in a 24-hour period over time, with both a 10 percent moving average trend line and a linear trend line. Linear trends show a rise in greater than 2 inches/day events over time and the possibility of years in which average extreme event occurences are more than doubled. Data were sourced from the Niceville, FL, Weather Station (2022).

2.2.2 Landforms

Eglin AFB occupies portions of two physiographic provinces: the Coastal Lowlands and the Western Highlands (Figure 2-10). The Coastal Lowlands include the southern half of the Eglin AFB mainland Reservation, SRI, and CSB. The barrier islands are associated with estuaries such as Pensacola Bay, Choctawhatchee Bay, and St. Josephs Bay. SRI and the barrier strips along CSB formed as offshore beach bars and spits from sand supplied by coastal headlands.

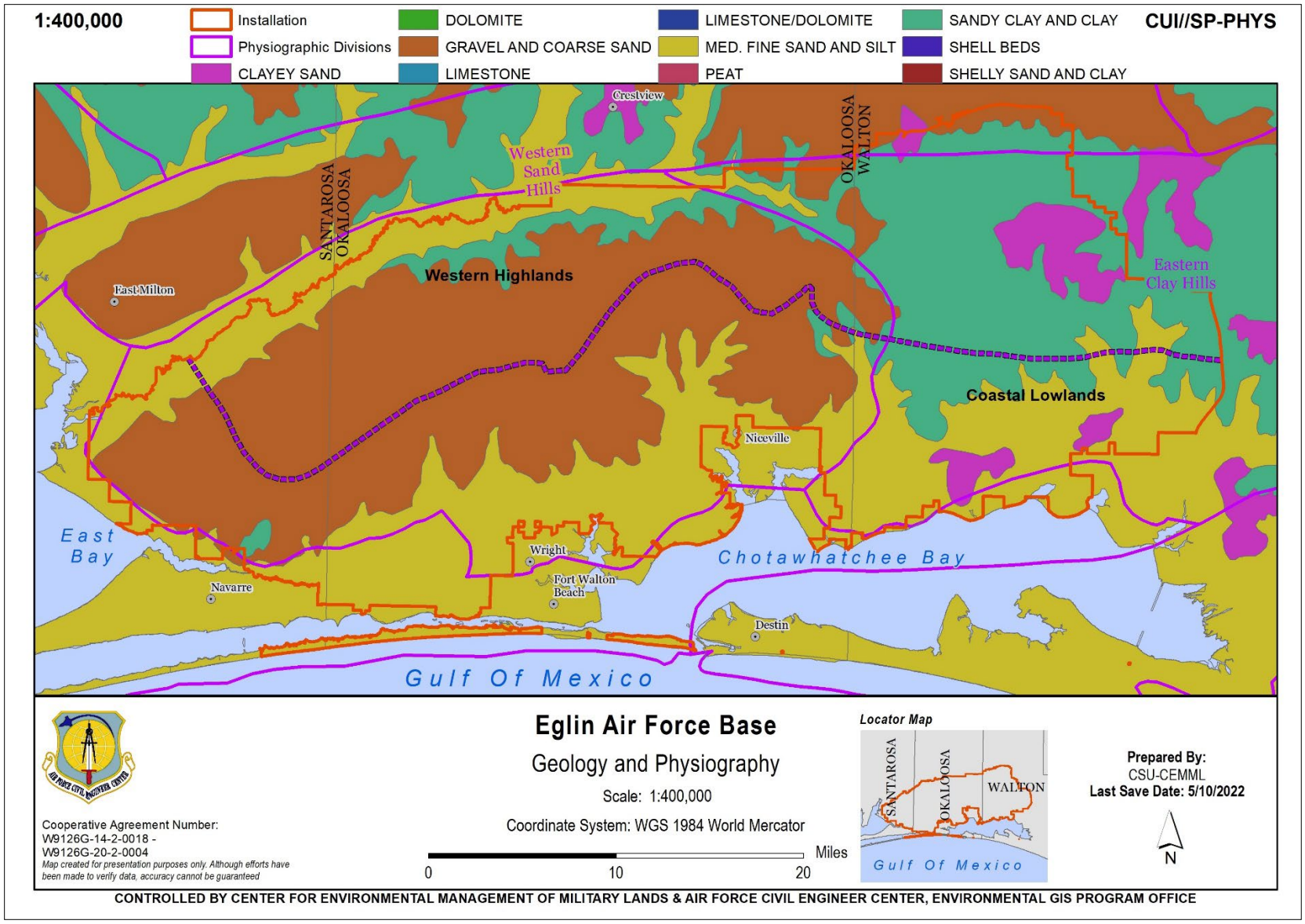

Figure 2-10. Geology and physiography of Eglin Air Force Base.

In the past, when sea levels were higher, they eroded the Western Highlands (Citronelle Highlands). The Western Highlands province is separated from the Coastal Lowlands by the Cody Scarp, which was produced by the erosive action of waves along the shoreline. The marine terraces of the Coastal Lowlands were created by episodic fluctuations in sea level during the waxing and waning of glacial ice masses. These are predominantly underlain by sand with local occurrences of clay, shell beds, and peat (Green et al. 2001). The Western Highlands consist of topographically higher (100 to over 200 feet above mean sea level [MSL]) sandhills cut by deep narrow stream valleys (Green et al. 2001, USAF 1995).

2.2.3 Geology and Soils

2.2.3.1 Geology

The area that encompasses Eglin AFB consists of unnamed Holocene and Pliocene sands. These sands on the Citronelle formation consist of approximately 250 feet of dominantly non-marine quartz sands, interspersed with some gravel and relatively thin clay lenses (Green et al. 2001, USAF 1995). Kaolinite is the primary clay found in the two types of sandy clay units forming the Citronelle Formation (USAF 1995). Underneath these formations is the Pensacola confining bed (Miocene aged) ranges from 140 feet above MSL in central Walton County to more than 125 feet below MSL in southwestern Okaloosa County (Green et al. 2001). This impermeable confining bed creates the top layer of the sand and gravel aquifer and the upper limestone of the Floridan aquifer, and inhibits the movement of water from the aquifers. The bed is made up of clays and clayey sands with some limestone and shell fragments (Green et al. 2001).

2.2.3.2 Soils

The soils on Eglin AFB have developed from the Citronelle Formation as well as alluvium (gravel, sand, silt, and clay deposited by water) from the floodplains of lowland areas. The majority of soils on Eglin AFB belong to the Lakeland Association (Figure 2-11 and Figure 2-12). These excessively drained, brownish-yellow sands have developed along broad ridgetops and slopes. Typically, they have sandy surface layers with sandy subsoils that are more than 80 inches deep. Lakeland soils are typically associated with Chipley, Dorovan, Foxworth, and Troup soils. Only the Dorovan soils have a high degree of organic content; thus, they are considered mucks. Lakeland sands vary in acidity from medium to very strong.

Dorovan-Pamlico mucks are the second most abundant soils found on Eglin AFB. These mucks are composed of more than 20 percent organic material that is highly decomposed. They are very poorly drained and strongly acidic. Water is usually at or near the surface for nine months or more each year. About 60 percent of this association is made up of Dorovan soils, which have organic material that is more than 40 inches deep. The Pamlico soils make up about 25 percent and have soils that are 20 to 40 inches deep (USAF 1993). Table 2-5 lists soils that are represented on Eglin AFB (USDA 1980, 1989, 1995). The growing season is from mid-March to mid-November.

2.2.4 Hydrology

2.2.4.1 Surface Waters

The main reservation of Eglin AFB encompasses portions of three hydrologic basins, including Choctawhatchee Bay, Yellow River Basin, and Pensacola Bay. CSB is in the St. Andrew-St. Joseph Bays watershed. Surface water in these basins is extensive; Eglin AFB includes 32 lakes (over 300 acres of man-made ponds and natural lakes), 30 miles of rivers, an extensive stream network covering approximately 600 acres of the base, 20 miles of Gulf of Mexico shoreline, and it is adjacent to several estuarine bays along the Gulf of Mexico (Figure 2-13).

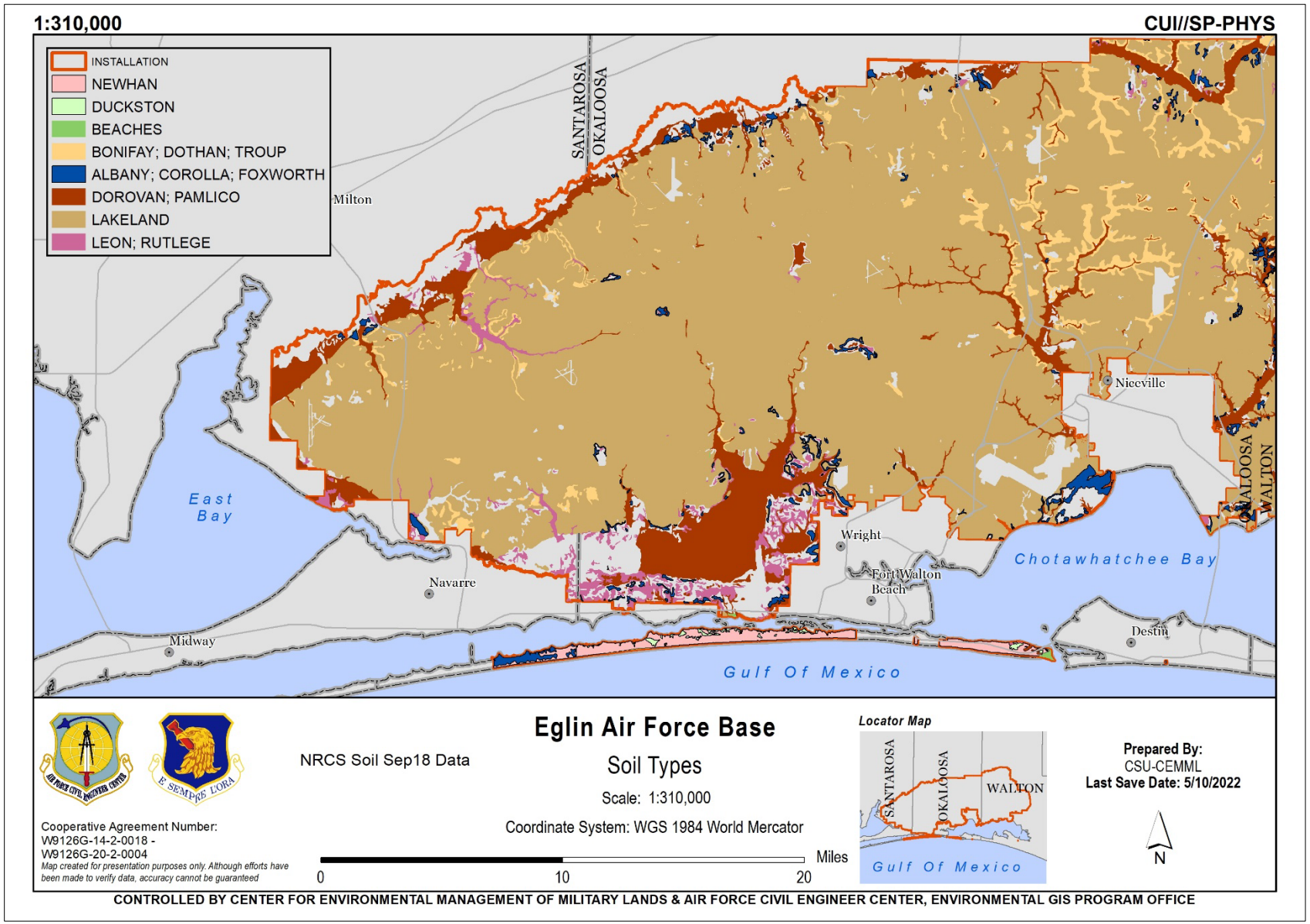

Figure 2-11. Soil types (West).

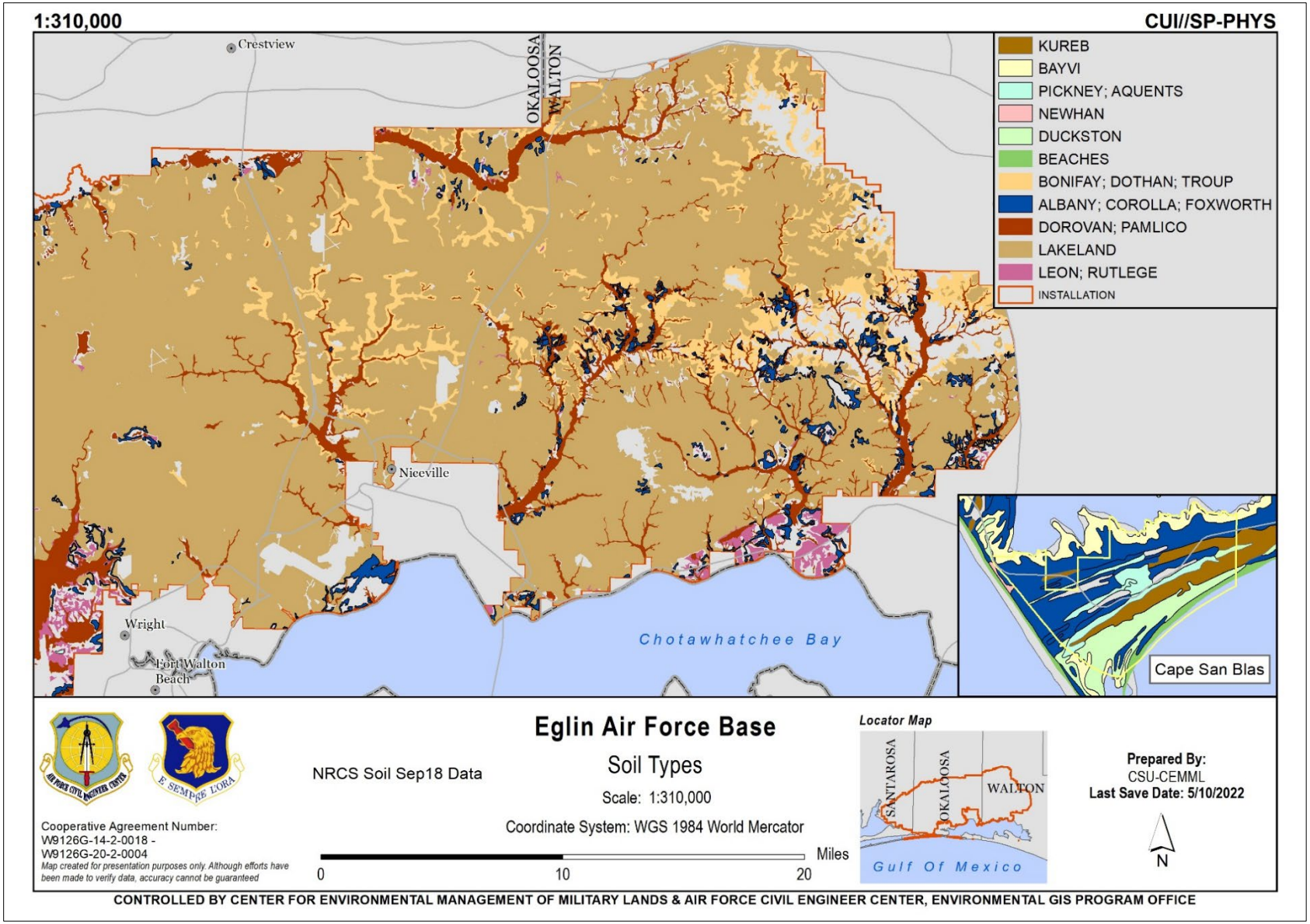

Figure 2-12. Soil types (East).

Table 2-5. Soil types and characteristics represented on Eglin Air Force Base.

Soil Name	Erosion Risk	Attributes	Soil Type
Lakeland Sand	Moderate to high	Yellowish brown to grayish brown	Sand
Johns Fine Sandy Loam	Moderate	Very fine grained interspersed with thick loam	Sandy Loam
Rutledge Loamy Sand	Low	Ponding, very acidic, clayey	Loamy Sand
Troup Loamy Sand	Low to moderate	Unconsolidated marine sediments, brown loam	Loamy Sand
Dorovan-Pamlico Association	Very low	Highly organic	Muck
Fuquay Loamy Sand	Low	Very acidic, ironstone nodules	Loamy Sand
Leon Sand	High to low	Marine-based sediments, can be mucky	Sand
Urban Land	Low	Natural soil not observed	Variable
Pactolus Loamy Sand	Low	Thick, deep soils, very acidic	Loamy Sand
Bibb-Kinston Association	Very low	Dark concretions, gravel, high organics	Silt Loam
Udorthents	Low	Excavated pits, low fertility	Silt Loam
Rutledge Sand	High	Very acidic, slow runoff	Sand
Troup Sand	Moderate	Unconsolidated marine sands	Sand
Dorovan Muck	Low	Highly organic	Muck
Foxworth Sand	Moderate	Very acidic	Sand
Chipley and Hurricane	Moderate	Moderately acidic	Sand
Bonifay Loamy Sand	Low	Very acidic, ironstone pebbles	Loamy sand

The main reservation can be divided into two major areas based on the patterns and configurations of the numerous drainages (United States Army Corps of Engineers [USACE] 1993). These patterns are a function of one or more of the following: variations in the lithology and thickness of the underlying Citronelle Formation, and the presence of relict geomorphic features, such as beach ridges and terraces, faults, and "sandstone outcrops" (hardpan layers). The northern and western portions of the Reservation are characterized by primary channels, generally flowing east to west, with secondary tributaries flowing south to north. Most of these drainage systems are characterized by U-shaped channels and trellis-type patterns (i.e., where tributaries are generally straight and intersect other drainages at right angles). Most of the northern drainages flow into the meandering Yellow River, which coincides with the northwestern base boundary. The eastern and southeastern portions of the Reservation are characterized by V-shaped primary channels flowing north to south, with tributaries oriented in a dendritic pattern (i.e., branch-like tree limbs).

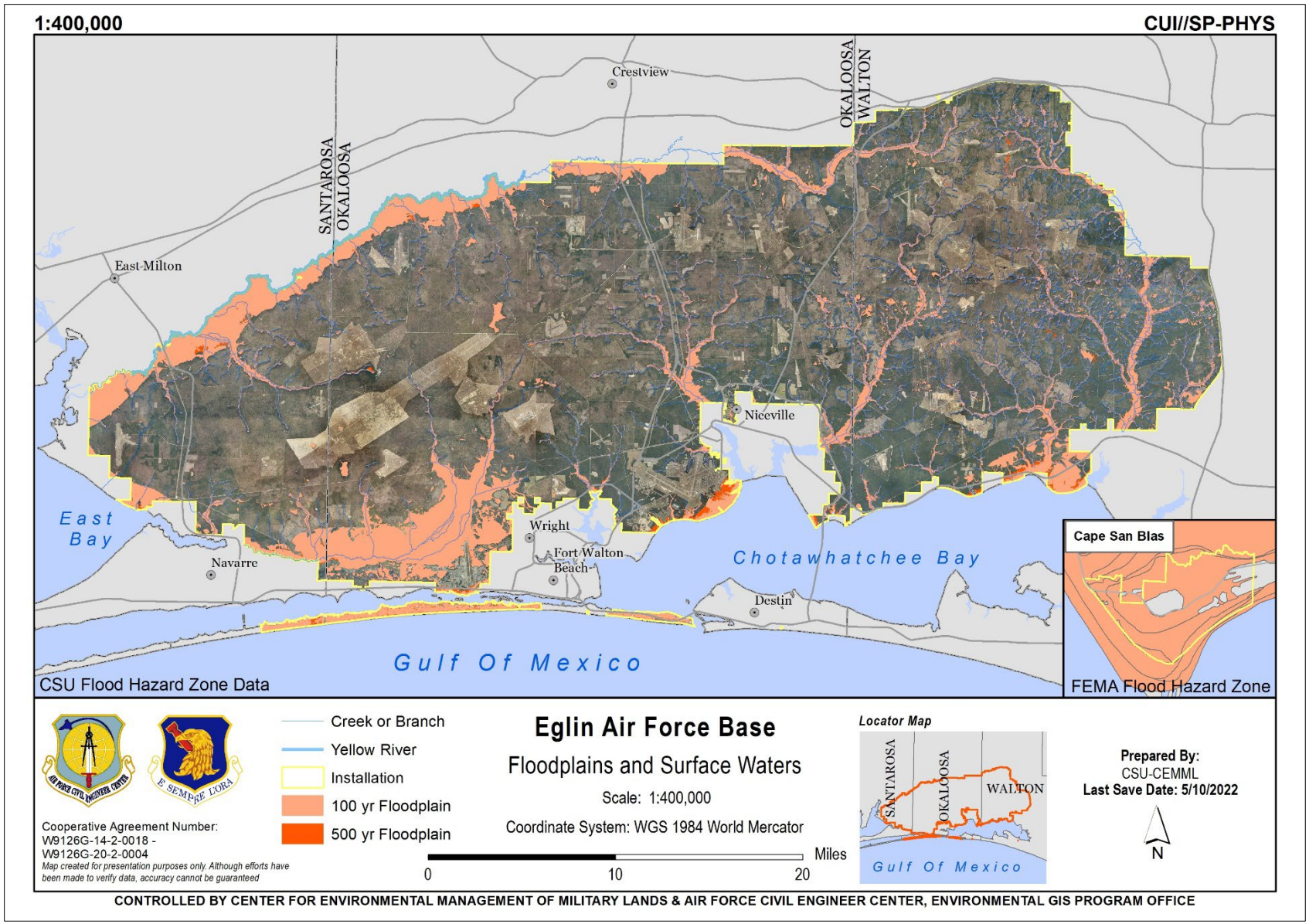

Figure 2-13. Floodplains (100- and 500-year) and surface waters of Eglin Air Force Base main reservation.

Most of the streams on Eglin AFB are classified as seepage streams or blackwater streams. One spring-fed stream, Blue Spring Creek in Okaloosa County, originates from a deep artesian spring. Seepage streams are clear to lightly colored, relatively short, shallow, and narrow water courses originating from shallow ground waters that have percolated through deep, sandy, upland soils. Unique types of seepage streams, called steephead streams, are characterized by steep slopes terminating in amphitheater-like ravines where the spring flow originates, and has plants and animals more typical of Appalachian Mountain areas. Blackwater streams are steep-banked streams that characteristically have tea-colored waters laden with tannins, particulates, and dissolved organic matter and iron from swamps and marshes that feed into the streams.

Most of the ponds on Eglin AFB are man-made impoundments, resulting from the backup of water behind small dams built on streams. Eglin AFB has both permanent and temporarily inundated wetlands, some of which contain herbaceous or woody vegetation.

On SRI, no well-developed drainages exist, but numerous coves and inlets may be found along the northern edge of SRI. There are brackish ponds and many other small wetlands. Surface runoff drains into Choctawhatchee Bay, Santa Rosa Sound, and the Gulf of Mexico. At CSB, the only surface waters present are two small brackish coastal ponds at its point. Based on topography, surface water either drains into the Gulf of Mexico to the south or St. Joseph Bay to the north.

The bays adjacent to Eglin AFB are brackish, with many of them supporting shellfish populations and beds of submerged aquatic vegetation. The EGTTR extends over 124,642 square miles of water and includes coastal, continental shelf, and deeper oceanic waters. More detailed descriptions of the different aquatic systems found on Eglin AFB are in the Eglin Environmental Baseline Survey Resources Appendices (USAF 2003).

2.2.4.2 Outstanding Florida Waters

Several water bodies on or adjacent to Eglin AFB have been defined as Outstanding Florida Waters (62-302.700, Florida Administrative Code [F.A.C.]) because they have exceptional recreational or ecological significance. It is the FDEP's policy to afford the highest protection to Outstanding Florida Waters, which are listed below.

- Fred Gannon Rocky Bayou State Park
- Basin Bayou Recreation Area
- Gulf Islands National Seashore
- Rocky Bayou State Aquatic Preserve
- St. Joseph Bay Aquatic Preserve
- Yellow River Marsh Aquatic Preserve
- Shoal River

2.2.4.3 Surface Water Quality

Water quality in the waters on and adjacent to Eglin AFB is typically good; however, there are issues with excess sedimentation and bacteria in some areas. Impaired waters on or adjacent to Eglin AFB are listed in Table 2-6. Most of these waters receive urban stormwater runoff, which is the probable source of the bacteria causing impairment. Turbidity in the Yellow River and East Bay River is likely due to the numerous unpaved roads in the watersheds. Eglin AFB has a very active erosion-control program that is currently investing substantial resources into these watersheds.

Table 2-6. Impaired waters on or adjacent to Eglin Air Force Base.

Water Body	303(d) List (Year)	Impairment Parameter
Alaqua Bayou	2016	Nutrients (chlorophyll-a)
Alaqua Creek	2016	Fecal coliform
Blackwater River	2010	Bacteria (shellfish harvesting classification), mercury (in fish tissue)
Boggy Bayou	2008	Nutrients (total nitrogen, chlorophyll-a)
Choctawhatchee Bay	2008	Fecal coliform (shellfish harvesting), exceeds Shellfish Environmental Assessment Section thresholds
Eagle Creek	2016	Fecal coliform
East Bay	2010	Bacteria (shellfish harvesting classification), fecal coliform
Rocky Bayou	2010	Nutrients (total nitrogen)
Santa Rosa Sound	2010	Fecal coliform
Turkey Creek	2016	Iron, fecal coliform
Yellow River	2006	Fecal coliform, mercury (in fish tissue)

The 96th Civil Engineer Group, Environmental Compliance, Environmental Engineering (96 CEG/CEIEC, Environmental Engineering) provides support and guidance regarding policy and permits for specific environmental programs (air, water, and storage tanks), including Section 401 and 404 of the CWA, and conducts environmental engineering evaluations of base operations (facilities, systems, and processes) to ensure continued compliance with permit and media-specific requirements. Eglin NRS works closely with the 96 CEG/CEIEC in water quality and wetland management.

2.2.4.4 Groundwater

Main Reservation

Two major aquifers underlie the main reservation of Eglin AFB: the surficial aquifer, also known as the sand and gravel aquifer, and the Floridan aquifer. The sand and gravel aquifer are a generally unconfined, near-surface unit separated from the underlying confined Floridan aquifer by the low-permeability Pensacola Clay confining bed. The sand and gravel aquifer are mainly composed of clean, fine-to-coarse sand and gravel, while the Floridan aquifer consists of a thick sequence of inter-bedded limestone and dolomite.

Water quality of the sand and gravel aquifer is usually good, but it is vulnerable to contamination from surface pollutants due to its proximity to the ground surface (USAF 2003). Water from the sand and gravel aquifer is not a primary source of domestic or public water supply on Eglin AFB because of the higher quality water available from the underlying upper limestone of the Floridan aquifer. Water quality of water drawn from the upper limestone of the Floridan aquifer is of suitable quality for most use and is the primary source of water used at Eglin AFB. The top of the aquifer is about 50 feet below MSL in the northeast corner of the base and increases to about 700 feet below MSL in the southwestern area of the base (McKinnon and Pratt 1998). The wells on Eglin AFB tap into both the surficial and Floridan aquifers and are used for both potable and non-potable supply.

Groundwater levels have dropped up to 160 feet since 1940 at some locations in south Okaloosa County. One site on Eglin AFB in central Okaloosa County has dropped 100 feet since 1940 (NWFWMD 2005). The NWFWMD has identified excessive groundwater pumping for water supply as the reason for these drops. While the Floridan aquifer is the primary source for drinking water at Eglin AFB and the surrounding areas, due to groundwater level decreases, the sand and gravel aquifer is being examined for increased pumpage. This aquifer is already used as a water source in Santa Rosa County but has not been used in Okaloosa County for potable supply.

To address the water supply needs of the area, the NWFWMD developed the Regional Water Supply Plan for Santa Rosa, Okaloosa and Walton Counties (NWFWMD 2001). This plan identified current water sources and current and future water demands within the region, along with alternative water supply sources to meet the region's water needs through the 2020 planning horizon. Strategies were also discussed that would better determine the ability of current and alternative sources to meet the region's future demands.

Cape San Blas

At CSB, there are three aquifers from which fresh water may be obtained: the surficial aquifer, the intermediate confining unit, and the Floridan aquifer. The surficial aquifer system at CSB is recharged through direct infiltration of rainwater and consists of a relatively narrow band of unconfined waters moving through undifferentiated sand and clay sediments. Below the surficial aquifer is the intermediate confining unit, an aquifer that is confined within sediments, and as such is not prone to vertical movement. The Floridan aquifer is the most important of the three aquifers in terms of volume and quality of water. It supplies the majority of domestic, urban, and agriculture water used in Gulf County. The top of the Floridan aquifer is approximately 500 feet MSL under CSB. Sampling by Lamont and others indicates that the surficial water table at CSB is not influenced by saltwater intrusion (Lamont et al. 1997). There is one drinking water well located on CSB.

2.2.4.5 Stream Channel Modeling

Researchers at CSU CEMML modeled stream channel overflow (i.e., flooding) associated with climate projections for Eglin AFB to examine the extent of flooding along the Yellow River. Models did not consider flooding of independent surface bodies, stormwater systems, or surface ponding. Flood modeling was conducted using local watershed characteristics and design storms generated from projected precipitation data based on RCP 4.5 and 8.5 emission scenarios for the 2030 and 2050 time periods described in Section 2.2.1.1. Historical precipitation data were used to calculate a baseline storm event for the year 2000 for comparison. The projected design storms do not represent extreme weather events (e.g., hurricanes, extraordinary storm fronts).

Inundation projections were influenced by four variable inputs: (1) variation in total precipitation between design storms, (2) variation between the daily distribution of precipitation over the three-day period, (3) land cover change over the watershed area used in hydrologic modeling, and (4) land cover change in the area within the installation used in hydraulic modeling.

Projected inundation associated with each climate scenario and the relative change from baseline conditions are summarized in tables and maps in the Hydrology Appendix of the CEMML Climate Change Report (CEMML 2019). By 2030, total design storm precipitation is projected to decline by 7.6 percent under the RCP 4.5 scenario and 22.5 percent under the RCP 8.5 scenario. Projected inundation is expected to stay approximately the same in 2030 under the RCP 4.5 emission scenario but is projected to decrease by nine percent under the RCP 8.5 scenario, reducing total inundation area by nearly 550 acres. By 2050, total design storm precipitation is similar to the baseline under the RCP 4.5 scenario but is projected to increase

by 28.2 percent relative to the baseline under the RCP 8.5 scenario. Inundation is projected to decrease by 342 acres under the RCP 4.5 scenario in 2050 but is projected to return to approximately the baseline levels under the RCP 8.5 scenario (CEMML 2019).

2.2.4.6 Coastal Zone Modeling

CSU CEMML used a DoD site-specific scenario database to assess future exposure to sea level rise and storm surges at Eglin AFB. Details on the development and use of this database are described in Hall et al. (2016). Extreme water level scenarios were based on regional frequency analysis estimates of 20-year and 100-year storm surges. Coastal flooding projections were modeled for RCP 4.5 and RCP 8.5 emission scenarios in 2035 and 2065 in accordance with the DoD scenario database. Sea level rise inundation estimates the new permanent coastline for each scenario and timeframe; storm surge inundation estimates short term flooding associated with an extreme water level event that is expected to recede after the storm.

Table 2-7 summarizes projected coastal inundation in acres for each scenario. Sea level rise is projected to reduce installation area by 243 acres (RCP 4.5, 2035) to 964 acres (RCP 8.5, 2065). Projections for 20-year storm surges, which have a five percent probability of occurring any given year, estimate possible inundation of 8,761 acres for the RCP 4.5 scenario in 2035 to 10,319 acres for the RCP 8.5 scenario in 2065. Projections for 100-year storm surges, which have a one percent probability of occurring any given year, estimate possible inundation up to 15,159 acres (3.3 percent of the installation area) for the RCP 8.5 scenario in 2065. The spatial extent of projected flooding due to sea level rise and storm surges is depicted in a series of maps included in the Hydrology Appendix of the CEMML Climate Change Report (CEMML 2019).

Table 2-7. Projected sea level rise and storm surge inundation.

Climate Scenario[1]		2035		2065	
		Projected inundation (acres)	Percent of installation area inundated (%)	Projected inundation (acres)	Percent of installation area inundated (%)
RCP 4.5	SLR	243	0.1	528	0.1
	20-yr SS	8761	1.9	9274	2.0
	100-yr SS	13151	2.9	13874	3.1
RCP 8.5	SLR	516	0.1	964	0.2
	20-yr SS	9276	2.0	10319	2.3
	100-yr SS	13960	3.1	15159	3.3

[1] SLR=sea level rise; RCP=Representative Concentration Pathway; yr=year; SS=storm surge.

2.3 Ecosystems and the Biotic Environment

2.3.1 Ecosystem Classification

The National Hierarchical Framework of Ecological Units is a mapping and classification system that examines soils, physiography, and habitat types to stratify the landscape into smaller areas (Bailey et al.

1994, Bailey 2014). According to Bailey (2014) classification, Eglin AFB falls within the Humid Temperate Domain, Subtropical Division, and Outer Coastal Plain Mixed Forest Province, and Section 232D Florida Coastal Lowlands (Western). This province is an ecoregion of humid, maritime climate with mild winters and warm summers. Precipitation is abundant with rare periods of summer drought. Florida Coastal Lowlands area is generally flat, mostly sandy poorly drained shallow water table. Widely scattered, shallow inundated depression often with hydrophilic species such as cypress. Vegetation is mostly longleaf-slash pine and oak-gum-cypress cover types (McNab et al. 2007).

2.3.1.1 Biodiversity and Special Natural Areas

The Florida panhandle, where Eglin AFB resides, is one of the leading biodiversity hotspots in the U.S., with upwards of 50 imperiled species (Figure 2-14). These hotspots were identified by examining the total number of species and the number of imperiled species. Similarly, a rarity-weighted richness index is provided in Figure 2-15. Moreover, Eglin AFB lies within the third largest biodiversity hotspot in the world. In 2016, the Geological Coastal Plain (within the North American Coastal Plain), also in which Eglin AFB resides, has been determined to meet the criteria set forth by Myers et al. (2000) as a global biodiversity hotspot. This coastal plain has now been documented to contain more than 1500 endemic vascular plant species with a greater than 70 percent habitat loss. The inclusion of these factors gives a more accurate picture of the overall conservation importance of Eglin AFB and its surrounding area. Within the panhandle, many diverse and unique habitats can be found. They include sandhills, flatwoods, seepage slopes, steephead ravines, hardwood forests, cypress swamps, coastal sand dunes, floodplain forests, and pitcher plant bogs. This diversity of habitats supports many rare species, some of which are found nowhere else in the world. Two such species are found on Eglin AFB—the Florida bog frog and the Okaloosa darter.

Eglin AFB's contribution to southeastern conservation is evident in its extraordinary biodiversity and the exemplary quality of its many remnant natural communities. While the greater part of the installation is globally significant due to its biodiversity, there are specific areas that are unique due to their high-quality examples of natural communities or presence of rare species. Termed "High-Quality Natural Communities," the Florida Natural Areas Inventory (FNAI) identified these areas as sites distinguished by the uniqueness of the community, ecological condition, species diversity, and presence of rare species. These high-quality areas, totaling 75,266 acres and covering approximately 16 percent of the installation, are tangible examples of the successful restoration actions of NR and the compatibility of these communities with most mission activities.

FNAI also identified special habitats that support rare plants on Eglin AFB called Significant Botanical Sites (SBSs), as well as larger-scale landscapes containing complexes of these High-Quality Natural Communities and rare species, which FNAI named Outstanding Natural Areas (ONAs) (FNAI 1995, 1997) (Figure 2-16 and Figure 2-17). Large portions of these two areas overlap with one another. Combined, these ONAs and SBSs total 43,210 acres, or approximately nine percent of the installation. These landscapes contain the highest quality examples of the natural communities on the installation, and, by extension, the highest quality examples of these natural communities globally. These areas are living legacies of the original forested landscape and the different natural communities that occurred in this region.

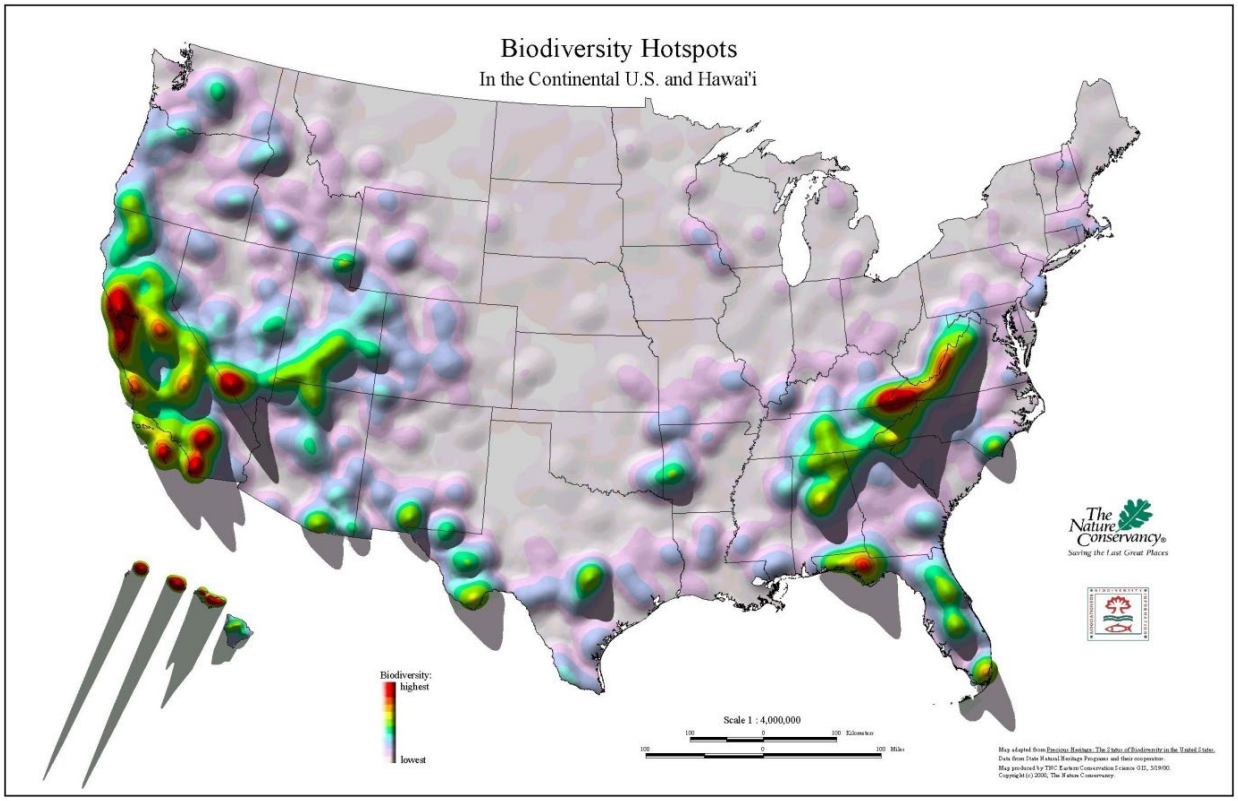

Figure 2-14. Biodiversity hotspots in the United States (source: Stein et al. 2000).

ONAs

- A-77 ONA
- Alaqua-Blount Creek Confluence
- Alice Creek
- Boiling Creek/Little Boiling Creek
- Brier Creek
- East Bay Flatwoods and Scrub Mosaic
- Live Oak Creek
- Lower Weaver River
- Patterson ONA and Extension
- Piney Creek
- Prairie Creek
- Santa Rosa Island
- Scrub Pond
- Spencer Flats Wetlands
- White Point
- Whitmier Island
- Yellow River Basin

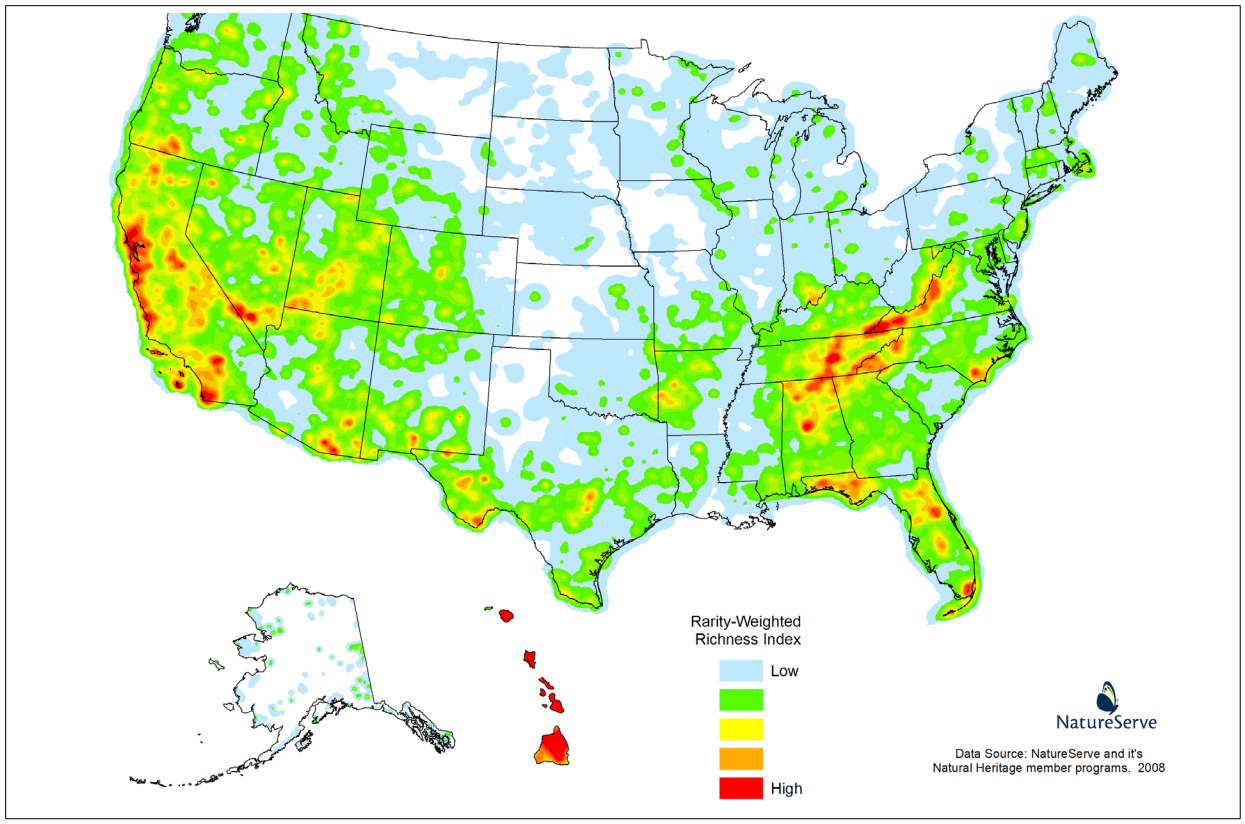

Figure 2-15. Rarity-weighted richness index of the United States (source: NatureServe 2013).

SBSs

- East Bay Savannahs
- Patterson Natural Area Expansion
- Santa Rosa Island
- Blue Spring Creek Lakes
- Malone Creek
- Titi Creek Wilderness Area
- Live Oak Cree
- Turkey Gobbler Creek Cypress Swamp
- Turkey Hen Creek Swamp
- Boiling Creek and Little Boiling Creek
- Hick's Creek Prairie
- Whitmier Island
- Brier Creek
- Hickory Branch Hardwood Forest
- Piney Creek

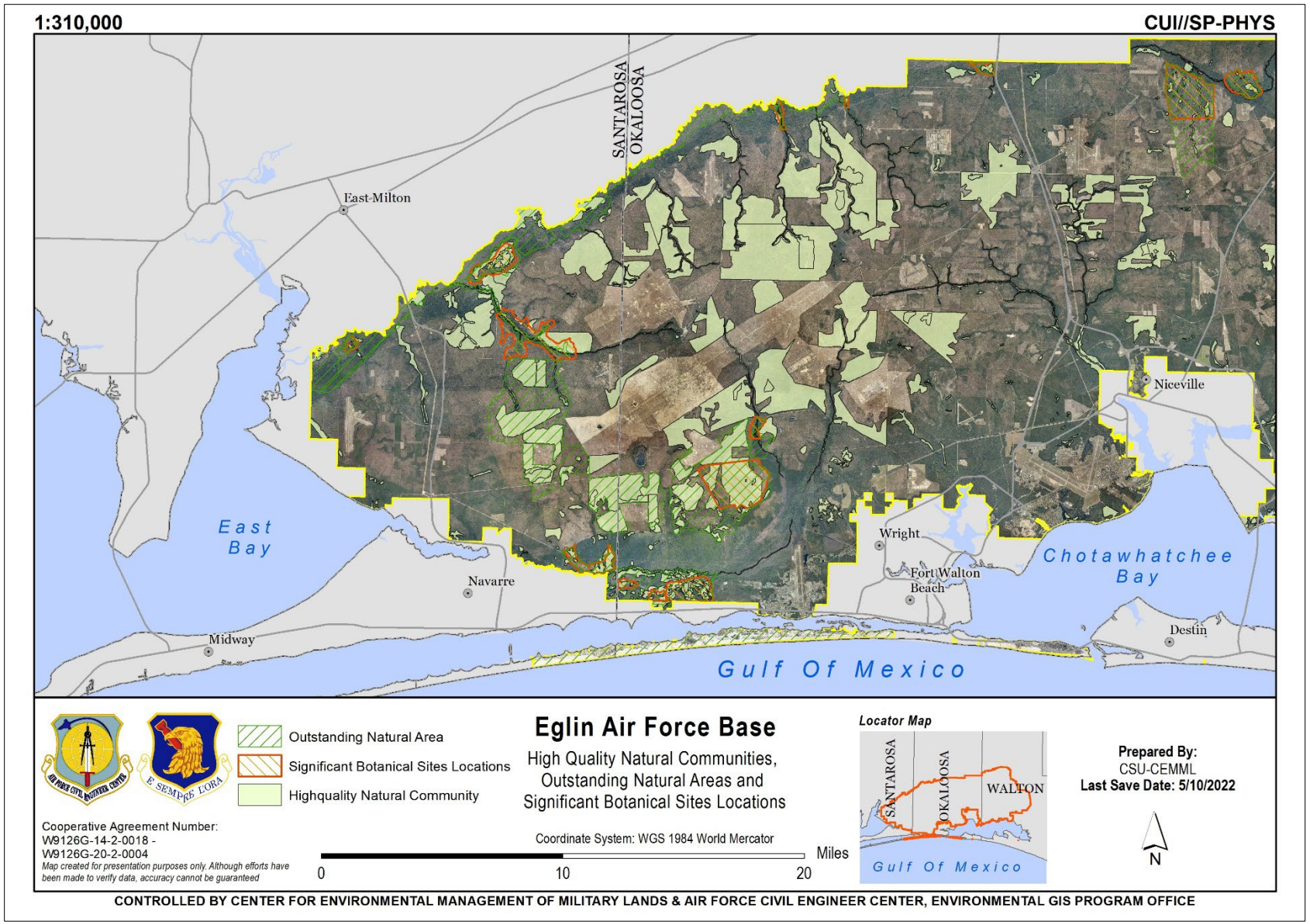

Figure 2-16. High-Quality Natural Communities, Outstanding Natural Areas, and Significant Botanical Sites on Eglin Air Force Base (West).

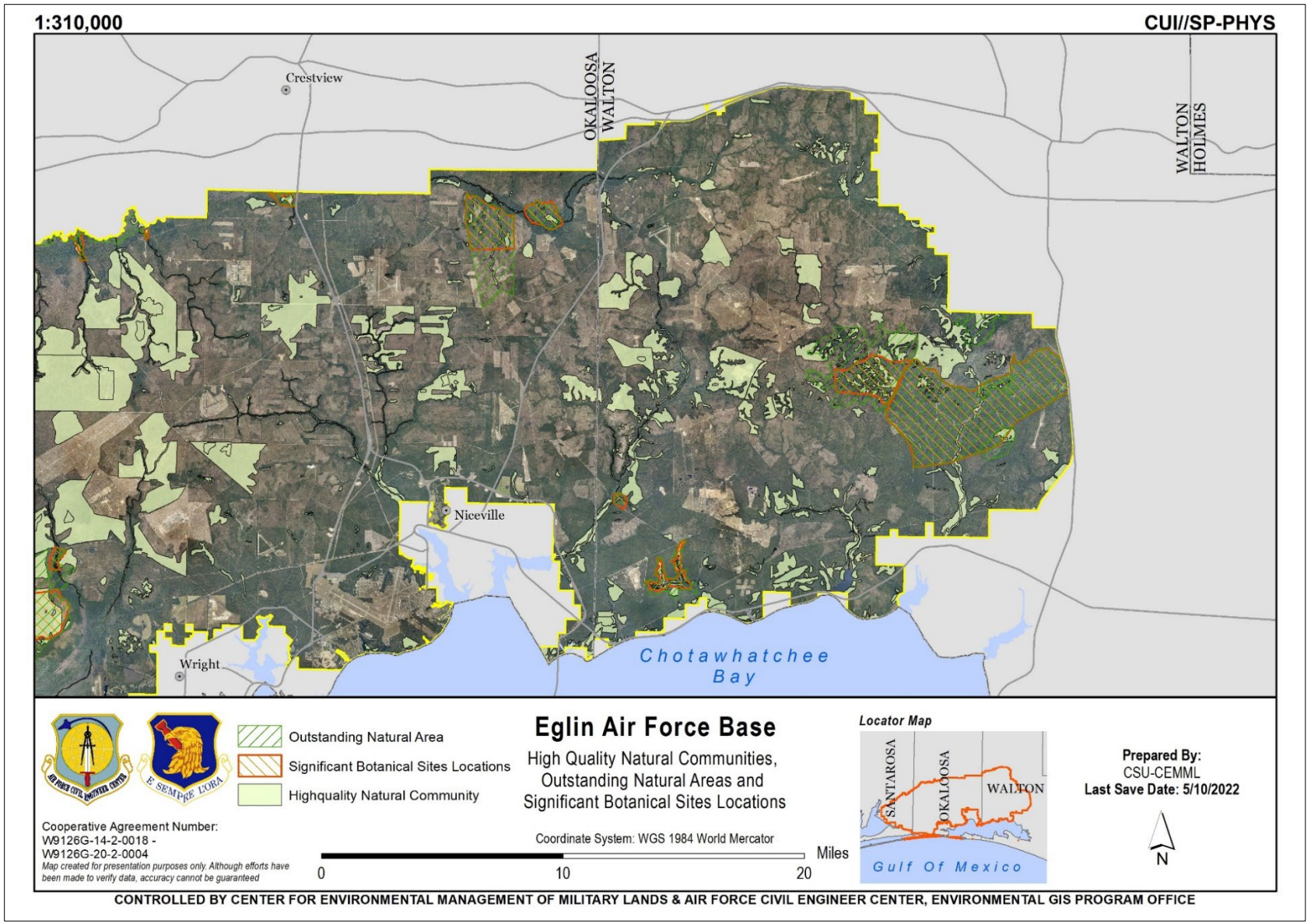

Figure 2-17. High-Quality Natural Communities, Outstanding Natural Areas, and Significant Botanical Sites on Eglin Air Force Base (East).

2.3.1.2 Core Conservation Area

In an effort to prioritize longleaf pine (*Pinus palustris*) restoration and management efforts on Eglin AFB, Eglin natural resource managers delineated a spatial polygon within the Eglin boundaries as the Core Conservation Area (CCA) (Figure 2-18). With limited resources insufficient to manage and restore all longleaf sandhills and flatwoods within the Eglin Reservation effectively, the managers agreed that a prioritized approach to management would focus the majority of resources in this core area where protected species habitat improvement was the primary management driver. Initially, in 2001, the boundaries of the CCA were designated as equivalent to the RCW Management Emphasis Area (MEA) 450. Following subsequent discussions among the managers, the boundaries of the CCA were expanded to include Eglin AFB's ONAs and certain species' habitat, most notably the East Bay Flatwoods (habitat to the RFS), as well as other ecologically significant areas such as the flatwoods in Basin Bayou.

The CCA currently occupies approximately 287,993 acres, most of which is contiguous across the Reservation. The primary application of the CCA as a management concept has been as an input layer to the Fire Management burn prioritization model. Longleaf uplands that are within the CCA are weighted more heavily in the burn prioritization model, thus increasing the probability of areas within the CCA receiving fire more frequently. The CCA is also used to prioritize other restoration and management activities, such as longleaf pine restoration. The boundaries of the CCA are updated annually, as agreed upon by Eglin AFB's natural resource managers.

2.3.2 Vegetation

2.3.2.1 Historical Vegetative Cover

Prior to European settlement, the Florida Panhandle area was dominated by vast longleaf pine forests that were maintained by fires set by Native Americans. The barrier island and beach vegetative communities were heavily influenced by salt spray and storms, including the shrubby dune and maritime forest areas. Eglin AFB has an extensive history of natural resource use prior to its establishment as a military reservation, the majority of which relates to naval stores and timber harvesting of longleaf pine in the 1800s and early 1900s. The majority of Eglin AFB's forests are secondary, having been cut over at least once, although there are still some stands of old growth longleaf pine. The USFS's Choctawhatchee National Forest Management plan written in 1939 describes the forest floor to be sparsely vegetated with little leaf litter. This was attributed to ". . . the frequency of past fires over the area." The Eglin AFB landscape began to change dramatically when the USFS and later Eglin AFB instituted fire suppression policies. In 1989, prescribed fire was reintroduced on a significant scale at Eglin by NR due to ESA concerns and military range sustainment needs.

2.3.2.2 Current Vegetative Cover

Ecological Associations

Field surveys of Eglin AFB's natural vegetative communities in the 1990s described 34 community types and 60 rare plants (Chafin and Schotz 1995, Kindell et al. 1997). These 34 community types fall into four broad ecological associations which are defined by floral, faunal and geophysical similarities (Figure 2-19 and Figure 2-20).

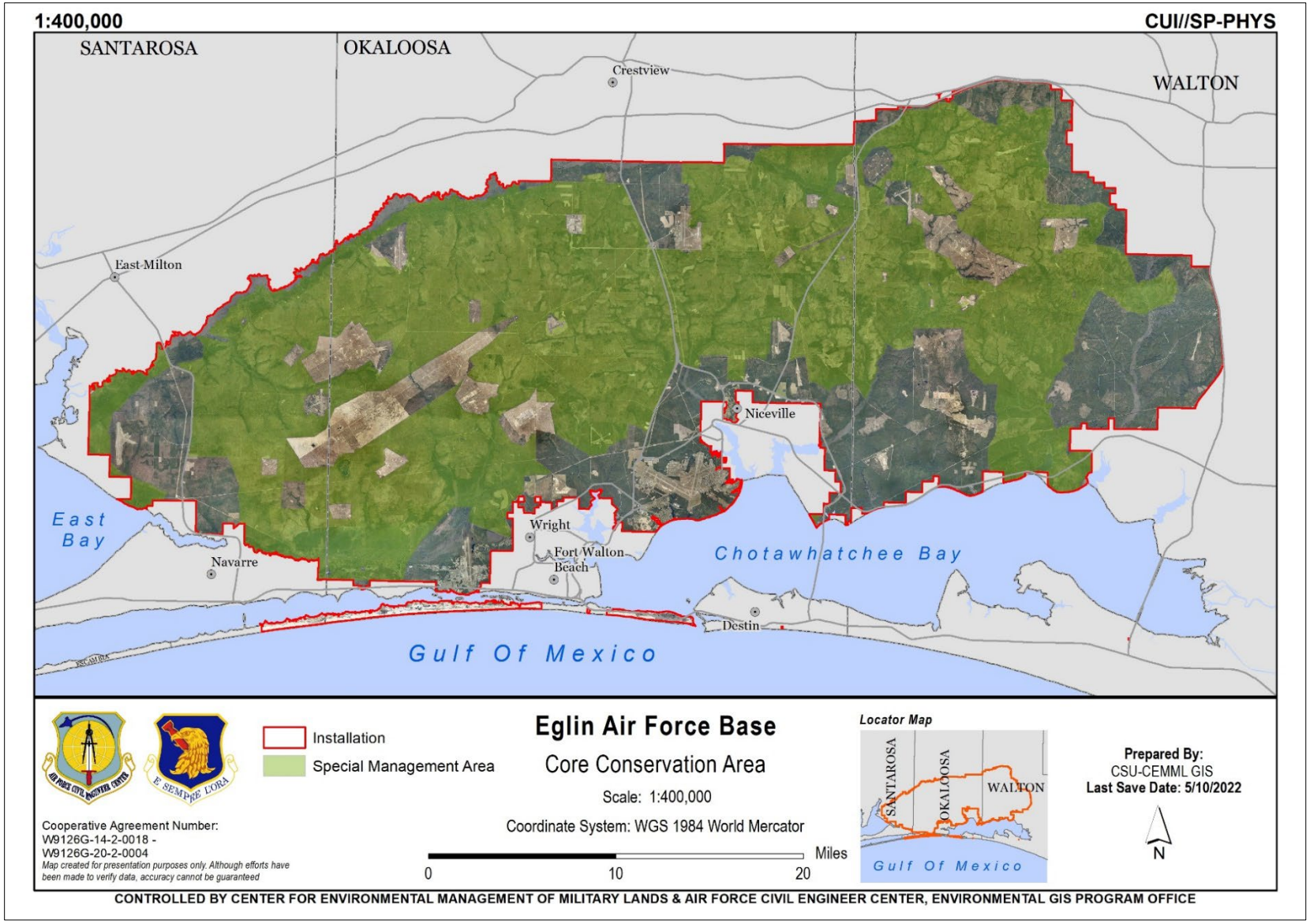

Figure 2-18. Core Conservation Area.

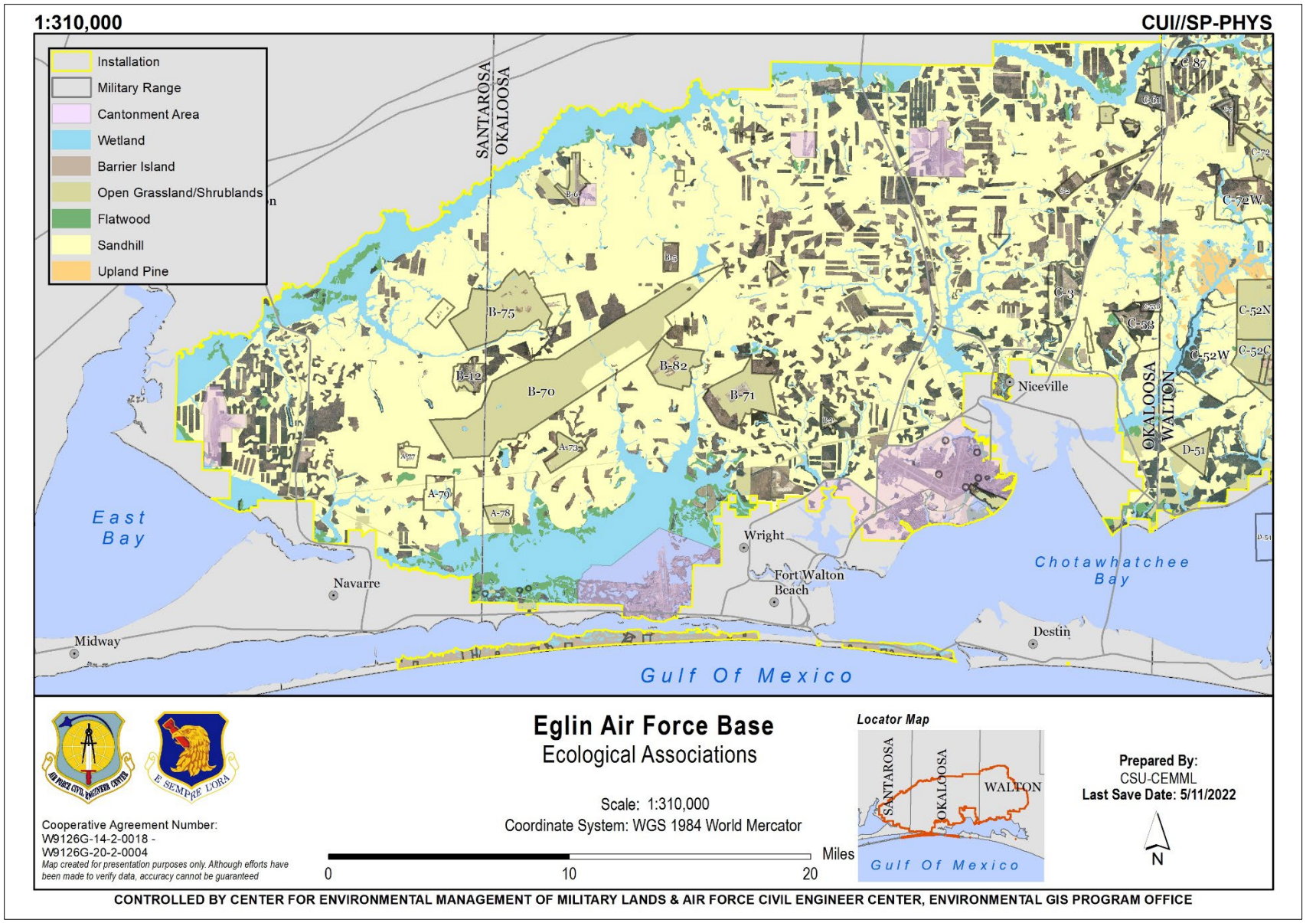

Figure 2-19. Ecological associations at Eglin Air Force Base (West).

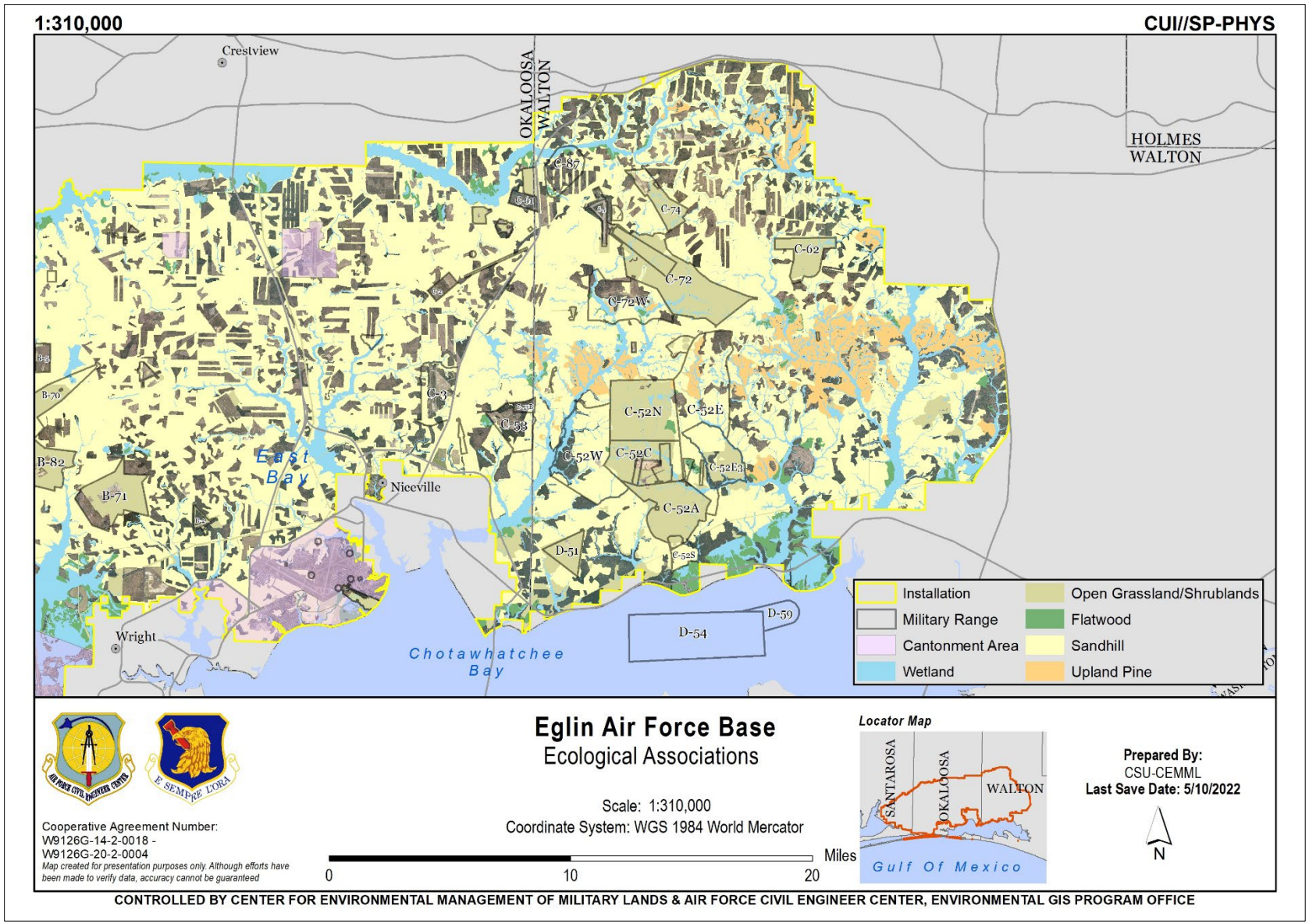

Figure 2-20. Ecological associations at Eglin Air Force Base (East).

Sandhill Matrix

As little as 5,000 acres of old growth longleaf pine forest remains globally and Eglin AFB's sandhills contain more than any other forest in the world. All stands of old growth longleaf pine have been identified, inventoried, mapped and protected in accordance with the recent E.O. 14072 (2022). The more than 4,400 acres of the Patterson Natural Area is one of the largest, most significant areas of old growth longleaf pine remaining.

This system is the most extensive natural community type on Eglin AFB, accounting for approximately 80 percent of the base. Longleaf Pine Sandhills are characterized by an open, savanna-like structure with a moderate to tall canopy of longleaf pine, a sparse midstory of oaks (*Quercus* spp.) and other hardwoods, and a diverse groundcover comprised mainly of grasses, forbs and low stature shrubs. The structure and composition were maintained by frequent fires (every three to five years), which controlled hardwood, sand pine (*Pinus clausa*) and swamp titi (*Cyrilla racemiflora*) encroachment. Both sand pine and swamp titi are weedy native species that can capitalize on lack of disturbance and dramatically alter ecosystem functions.

Sand pine encroachment is of concern in longleaf pine sustainment. A native species, sand pine was likely restricted to less fire-prone refugia such as riparian forest and coastal areas prior to fire suppression in the latter half of the 20th century. As humans began to harvest longleaf pine, suppress fires, and grow many types of trees in commercial plantations, sand pine began to expand northward and upward from its refugia. Over the period of 1949 to 1994, the predominantly longleaf-dominated forests on Eglin AFB shifted to sand pine with longleaf pine declining from 52 percent of the landscape to less than 13 percent (McCay 2001). Current extensive fire and forest management by Eglin AFB has made large strides in reversing this trend and restoring healthy longleaf pine habitat. Longleaf Pine Sandhills consist of a high diversity of species adapted to fire and the heterogeneous conditions that fires create. Variation within the Sandhills is recognized by the two associations differing in the dominance of grass species (wiregrass [*Aristida stricta*] versus Florida bluestem [*Andropogon floridanus*]).

Sandhills are often associated with and grade into Scrub, Upland Pine Forest, Xeric Hammock, or slope forests with species such as longleaf pine-turkey oak (*Quercus laevis*), longleaf pine-xerophytic oak (xerophytic oaks include *Quercus. inopina, Q. geminata, Q. myrtifolia*, and *Q. chapmanii*), longleaf pine-deciduous oak, or high pine. The functional significance of the Sandhill Matrix is to provide maintenance of regional biodiversity. Additionally, due to their wide coverage on Eglin AFB, the sandhills are the matrix across which fire carries into the other embedded fire-dependent systems. Eglin AFB is the largest and least fragmented, single longleaf pine ownership in the world, and has the best remaining old growth longleaf pine. Seepage slopes are a common embedded wetland feature found within Eglin AFB's sandhill matrix.

In 2017, researchers sampled native pollinators using pan traps in mature secondary and primary longleaf pine forests on the installation. Researchers identified 39 native bee species over just ten sampling days (Ulyshen et al, 2020). They collected species within diverse native genera, including *Andrena*, *Augochloropsis*, *Bombus*, *Ceratina*, *Colletes*, *Habropoda*, *Lasioglossum*, *Megachile*, *Osmia*, *Perdita*, and *Svastra*. The diversity of bees observed in these forests supports evidence that fire-maintained longleaf pine can be valuable native bee habitat, and that forest management is compatible with efforts to support pollinator habitat in our regional forest types (Hanula et al. 2015).

Sandhills habitats degrade when fire is suppressed or infrequent, (e.g., smoke-sensitive areas or urban interfaces). Infrequent fire results in dense midstories of evergreen oak and other hardwoods, which in turn inhibit groundcover and groundcover-produced fuels needed to carry fire. Sand pine-dominated forests are the result of sand pine encroachment inland and upland, from coastal scrub habitats, sand pine plantations,

and disturbances caused by historic forestry and grazing practices (McCay 2001). The invasion is an effect of fire suppression and the species' prolific reproduction.

Flatwoods Matrix

Pine flatwoods occur on flat, moderately well drained sandy soils with varying levels of organic matter, often underlaid by a hard pan. While the canopy consists of Florida slash pine (*Pinus elliottii* var. *densa*) and longleaf pine, the understory varies from shrubby to an open diverse understory of grasses and herbs. The primary environmental factors controlling vegetation type are soil moisture (soil type and depth to groundwater) and fire history. The average fire frequency in flatwoods is one to eight years, with nearly all of the plants and animals inhabiting this community adapted to recurrent fires. Home to numerous rare and endangered plants and animals, the Flatwoods Matrix plays a significant role in maintaining regional biodiversity, Eglin AFB's more than 300 acres of old growth flatwoods are among the last remaining of such high quality.

Barrier Island Matrix

The natural communities associated with this complex contain substrate and vegetation that are influenced primarily by such coastal (maritime) processes as erosion, deposition, salt spray, and storms. Vegetative communities include primary and secondary dunes, interdune swales, maritime forests, and sand pine scrub. The central and eastern units are more disturbed by humans due to impacts from public recreation. The functional significance of barrier islands is to provide maintenance of regional biodiversity and protect the mainland and bays from extreme storm events.

Wetlands/Riparian Matrix

Wetlands are extraordinarily important contributors to the health and diversity of the Eglin AFB landscape. Riparian areas are generally found along a water feature such as a river, stream, or creek. The FNAI initially conducted an inventory of these features in 1994, but satellite field imagery is now used to map and document changes within many of these features. Great diversity of invertebrate and fish species is found within the streams associated with these watersheds. At least 11 different plant community types, defined by the State Heritage Program, are found within riparian areas on Eglin AFB. Streams are perennial, originating in the sandy uplands of the installation and fed by groundwater recharge. Flood events only occur during extreme rain events (e.g., hurricanes), otherwise flows are relatively consistent. Temperatures fluctuate during the year and each day, being more constant near the headwaters. These seepage streams are moderately acidic. Table 2-8 shows the type of wetlands/riparian matrixes found on or adjacent to Eglin AFB. Wetland resources are discussed in greater detail in Section 7.6—Wetland Protection.

2.3.2.3 Turf and Landscaped Areas

Eglin AFB currently has approximately 46,000 acres of semi-improved areas and 14,000 acres of improved areas. Bahia grass (*Panicum notatum*) is the primary turf grass that is used in the semi-improved areas while St. Augustine grass (*Stenotaphrum secundatum*) and centipede grass (*Eremochloa ophiuroides*) are the primary turf grasses used in the improved areas. Ground maintenance encourages low maintenance landscaping and use native plants whenever possible. The Civil Engineering Squadron, Ground Maintenance (796th CES/CEOHG) is the POC for turf and landscape issues.

Table 2-8. Wetland types by wetland/riparian matrix on or adjacent to Eglin Air Force Base.

Wetland Type	Hydrological Source	Substrate	Vegetation	Functional Significance
Depression Wetlands	Groundwater or rainwater	Peat or sand	Woody and/or herbaceous	Maintains regional biodiversity Floodwater storage Filters pollutants Maintains water quality
Seepage Slopes	Downslope seepage (sheetflow)	High in clay	Herbaceous	Rare habitats High biodiversity
Floodplain Wetlands	Rivers, streams, and creeks	Peat or sand	Woody and/or herbaceous	Maintains regional biodiversity Floodwater storage Wildlife corridors Maintains water quality

The use of native plants in landscaped areas of urban environments is strongly encouraged, but some non-invasive horticulture varieties may also be used. These include crape myrtle (*Lagerstroemia indica*), knock-out rose (*Rosa* 'radrazz'), camellia (*Camellia* sp.) and hydrangea (*Hydrangea* sp.). All new developments are required to use the Eglin AFB (Florida) friendly plant list for landscaping plant selections. This list is available from the 96th Civil Engineer Group, Environmental Management Branch, Environmental Assets (96 CEG/CEIEA) EIAP representative and is provided as an attachment along with AF Form 813 comments.

2.3.3 Fish and Wildlife

Eglin AFB supports a rich diversity of game and non-game wildlife due to the variety of habitats found on the installation. Because large portions of Eglin AFB are undeveloped, the habitats found here are representative of natural Florida Panhandle habitats. These habitats support multiple rare species. Eglin AFB provides an abundance of high-quality fishing and hunting areas both on and adjacent to the Eglin Complex. Table 2-9 provides a summary of some of the fish and wildlife species typically found within Eglin AFB (please note that the list should not be considered a comprehensive inventory, but rather, a reference summary).

Eglin AFB also hosts a diversity of pollinator species. Following reports of substantial declines in pollinator populations worldwide, the President issued the memorandum, "Creating a Federal Strategy to Promote the Health of Honeybees and Other Pollinators" (Office of the Press Secretary 2014). This memorandum focused on development of a federal strategy to promote pollinator health and called upon the DoD to, "consistent with law and the availability of appropriations, support habitat restoration projects for pollinators." It directs military service installations to, "use, when possible, pollinator-friendly native landscaping and minimize use of pesticides harmful to pollinators through integrated vegetation and pest management practices." In response, AFCEC and USFWS issued the "U.S. Air Force Pollinator Conservation Strategy," which aims to sustain the mission and ecological integrity on USAF installations by implementing management practices that support pollinators, especially those with regulatory protections, and enhance their habitat (USFWS 2017b). Although only one protected pollinator is known to occur on Eglin AFB (the monarch butterfly, see Section 2.3.4), the state of Florida hosts >300 species of bees, and several dozen have been identified on the installation (Ulyshen et al. 2020). As such, the installation will employ the U.S. Air Force Pollinator Conservation Strategy (USFWS 2017b) to continually develop pollinator habitat and outreach activities in support of this ecologically important group.

Table 2-9. Summary list of representative fish and wildlife species found on Eglin Air Force Base.

Common Name	Scientific Name	Common Name	Scientific Name
Bird Species		**Fish Species**	
Belted Kingfisher	*Megaceryle alcyon*	Largemouth Bass	*Micropterus salmoides*
Flycatchers	*Tyrannidae* spp.	Long-nosed Killifish	*Fundulus similis*
Great Blue Heron	*Ardea herodias*	Sailfin Shiner	*Pteronotropis hypselopterus*
Great Horned Owl	*Bubo virginianus*	Sheepshead Minnow	*Cyprinodon variegatus*
Northern Bobwhite	*Colinus virginianus*	**Mollusk Species**	
Red-shouldered Hawk	*Buteo lineatus*	Oyster	*Crassostrea virginica*
Red-winged Blackbird	*Agelaius phoenicius*	Periwinkles	*Littorina irrorata*
Herpetofauna Species		**Mammal Species**	
American Alligator	*Alligator mississippiensis*	American Beaver	*Castor canadensis*
Black Racer	*Coluber constrictor*	Cotton Mouse	*Peromyscus gossypinus*
Cottonmouth	*Agkistridon piscivorus*	Cotton Rat	*Sigmodon hispidus*
Eastern Diamondback Rattlesnake	*Crotalus adamanteus*	Eastern Cottontail	*Sylvilagus floridanus*
Eastern Garter Snake	*Thamnophis sirtalis*	Eastern Mole	*Scalopus aquaticus*
Five-lined Skink	*Plestiodon fasciatus*	Gray Fox	*Urocyon cinereoargenteus*
Green Anole	*Anolis carolinensis*	Least Shrew	*Cryptotis parva*
Pygmy Rattlesnake	*Sistrurus miliarius*	Marsh Rabbit	*Sylvilagus palustris*
Six-lined Racerunner	*Aspidoscelis sexlineata*	Northern Raccoon	*Procyon lotor*
Slender Glass Lizard	*Ophisaurus attennnuatus*	Red Fox	*Vulpes vulpes*
Crustacean Species		Southeastern Pocket Gopher	*Geomys pinetis*
Ghost Crab	*Ocypode quadratus*	Southern Fox Squirrel	*Sciurus niger*
Gulf Crab	*Callinectes similis*	Virginia Opossum	*Didelphis virginiana*
		White-tailed Deer	*Odocoileus virginianus*

2.3.3.1 Climate Impacts on Fish and Wildlife

Inland fish and wildlife species at Eglin AFB are not likely to be substantially impacted by climate change, but species dependent on shoreline habitats will experience significant pressure. Sea level rise could lead to erosion of sandy beach habitats, which are important for shorebirds and sea turtles. Storm surges are not projected to play an integral role in degradation of shoreline until 2050 under RCP 8.5, when storm intensity is projected to increase. At this point, sandy shorelines could erode and the species that inhabit this system could experience substantial habitat loss.

Climate change could indirectly impact fish and wildlife populations by altering vegetation communities, and may also open niches for non-native invasive species, potentially degrading habitats on Eglin AFB.

Rising temperatures and rainfall have the potential to alter existing vegetation on Eglin AFB by providing favorable conditions for invasive species such as kudzu (*Pueraria montana*) and cogongrass (*Imperata cylindrica*) (Bradley et al. 2010). The potential for more frequent and higher intensity wildfires also grants invasive plants a greater opportunity to establish themselves in open niches, as newly arriving invasive species often can outcompete native species that are already experiencing reduced fitness due to changing environmental conditions (Hellmann et al. 2008). Changes in vegetation on the installation will have a negative effect on specialist wildlife species that have historically depended on specific native plant communities for their survival (Dukes and Mooney 1999).

2.3.4 Threatened and Endangered Species and Species of Concern

Myriad regulations at the federal and state level confer varying levels of protection to many species that occur or could occur on Eglin AFB. These species are referred to in this plan collectively as "rare and protected species." Species listed under the federal ESA are categorized as "threatened" or "endangered" (T&E), or they may be referred to as "candidate species" if they are under consideration for addition to the ESA list. Other federal protections include the Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), Magnuson-Stevens Fishery Conservation and Management Act (MSA) Essential Fish Habitat (EFH), and the MMPA; species listed under these Acts are collectively referred to as federally protected species.

State-protected species listed by FWC also occur on Eglin AFB. All federally protected species that occur in Florida are included on Florida's list as federally designated endangered or federally designated threatened species. In addition, the state has a listing process to identify species that are not federally protected but at risk of extinction. These species are called state-protected species in this plan. All state-protected species have undergone biological status reviews and listing status were updated June 2021 (FWC 2021).

Lastly, many Eglin AFB natural resources projects also benefit species that are rare but not formally protected at the federal or state level (referred to in this plan as "rare species"). These species include those tracked by the FNAI but not included on any other protection lists. Seventy-four state protected species (the majority of which are plants) are believed to occur or potentially occur seasonally or year-round on Eglin AFB. One hundred fifty-five more species are not listed by the FWC or the USFWS but are tracked by FNAI due to their rarity and/or declining population trends and are found or potentially found on Eglin AFB. A summary of these species is presented in Tab 8—Threatened and Endangered Species Component Plan.

AFMAN 32-7003 encourages biodiversity management to include the conservation of state-listed and other rare species; however, biodiversity management is not an Air Force mandate and as such is not considered a "must fund" area in the Air Force budgetary system. Nonetheless, the conservation of state protected species and other rare species, to include federal candidate species and petitioned species is encouraged and in some cases is critical to ensuring continued mission flexibility. Many rare species on Eglin AFB could easily become federally listed if NR does not adequately manage and conserve these species. For instance, Eglin SRI property contains a significant portion of the range of the FNAI-tracked Santa Rosa beach mouse, and almost the entire documented population of the state-threatened Florida bog frog is located on the base. Because of their rarity and extremely limited range, these species could be justified for federal listing in the future. Most members of the conservation community recognize that NR is committed to proper stewardship of these rare species and have not pursued federal listing designations. Eglin NRS must continue to effectively use its resources to keep Eglin AFB's rare species off the endangered species list

while recognizing that even with proper management these species could become listed due to their declining population trends across their range.

Eglin AFB harbors a remarkable assemblage of biodiversity, due in large part to the large size of the installation and its habitat quality and diversity, which include 34 distinct natural community types ranging from barrier islands to old growth longleaf pine forests. Most of the habitat types found on Eglin AFB are fire-maintained, meaning that they require frequent fire to preserve natural species composition and structure. This accounts for the exceptional habitat quality in the wooded portions of the installation adjacent to the active test areas, where wildfires are frequent, and the high concentrations of protected species in these areas. Total numbers of rare and protected species (FNAI 2021) by status are provided in Table 2-10.

Table 2-10. Rare and protected species* found on Eglin Air Force Base.

Status	Animals	Plants	Total
Federally protected	18	1	19
Federally threatened or endangered species found on Eglin Reservation	18	1	19
State listed/protected species**	19	55	74
Rare species tracked by Florida Natural Areas Inventory (FNAI)	164	5	169
Federally threatened, endangered, and MMPA-protected species in Gulf of Mexico but not actively managed	25	0	25

*A species is counted only once in this table. Where species appear on both state and federal lists, each species is counted only in the category of higher management priority or legal driver. Species that are both state- and federally listed will be counted here only as federal, species that are state-listed and FNAI-tracked will be counted here only as state-listed, and so-on.

** Includes former State Species of Special Concern as Florida Fish and Wildlife Conservation Commission reviews such species statuses.

Monitoring and survey programs are in place for the 17 federally protected species (including the bald eagle [*Haliaeetus leucocephalus*]) that occur either seasonally or year-round at the Eglin Reservation (Table 2-11) Detailed location information is available for most of these species (Figure 2-21, Figure 2-22, Figure 2-23, Figure 2-24, Figure 2-25, and Figure 2-26). Additionally, there are 25 federally protected species that occur within the EGTTR. Some state protected species are regularly monitored, like the least tern (*Sterna antillarum*) and snowy plover (*Charadrius nivosus*), and other state protected species petitioned for listing under the ESA (especially those under Species Status Assessment processes by the USFWS) are opportunistically tracked like the Georgia bully (*Sideroxylon thornei*) and Florida pinesnake (*Pituophis melanoleucus mugitus*). The alligator snapping turtle (*Macrochelys temminckii*) is currently proposed to be listed as federally threatened, and likely to be so listed imminently. Current management activities are likely sufficient to manage for this species, but a monitoring program should be developed to generate data to support Biological Assessments.

Table 2-11. Federally protected species associated with Eglin Air Force Base.

Species		Federal Protection Status[1]	Location[1]
Scientific Name	**Common Name**		
Ambystoma bishopi	Reticulated flatwoods salamander	Endangered	EMR
Cladonia perforata	Florida perforate lichen		SRI
Dermochelys coriacea	Leatherback sea turtle		SRI, SZ-SRI
Lepidochelys kempii	Kemp's ridley sea turtle		SRI, SZ-SRI
Dryobates borealis	Red-cockaded woodpecker		EMR
Villosa choctawensis	Choctaw bean		EMR
Acipenser oxyrinchus desotoi	Gulf sturgeon	Threatened	SZ-SRI, SZ-CSB, EMR
Calidris canutus rufa	Red knot		SRI, CSB
Carcharhinus longimanus	Oceanic whitetip shark		EGTTR
Caretta caretta	Loggerhead sea turtle (Northwest Atlantic Ocean Distinct Population Segment [DPS])		SRI, CSB, SZ-SRI, SZ-CSB
Charadrius melodus	Piping plover		SRI, CSB
Chelonia mydas North Atlantic DPS	Atlantic green sea turtle		SRI, SZ-SRI, EGTTR
Drymarchon couperi	Eastern indigo snake		EMR
Etheostoma okaloosae	Okaloosa darter		EMR
Fusconaia escambia	Narrow pigtoe		EMR
Hamiota australis	Southern sandshell		EMR
Macrochelys temminckii	Alligator snapping turtle		EMR
Manta birostris	Giant manta ray		EGTTR
Pleurobema strodeanum	Fuzzy pigtoe		EMR
Balaenoptera borealis	Sei whale	Endangered/ Marine Mammal Protection Act	EGTTR
Balaenoptera musculus	Blue whale		EGTTR
Balaenoptera physalus	Finback whale		EGTTR
Balaenoptera ricei	Rice's whale		EGTTR
Megaptera novaeangliae	Humpback whale		EGTTR
Physeter macrocephalus	Sperm whale		EGTTR
Trichechus manatus	West Indian manatee	Threatened/ MMPA	SZ-SRI, SZ-CSB
Haliaeetus leucocephalus	Bald eagle	BGEPA	EMR, CSB

Table 2-11. Federally protected species associated with Eglin Air Force Base.

Species		Federal Protection Status[1]	Location[1]
Scientific Name	**Common Name**		
Kogia spp. (x2)	Dwarf/pygmy sperm whale	Marine Mammal Protection Act	EGTTR
Mesoplodon and Ziphius spp. (x3)	Beaked whales		EGTTR
Orcinus orca	Killer whale		EGTTR
Feresa attenuata	Pygmy killer whale		EGTTR
Pseudorca crassidens	False killer whale		EGTTR
Peponocephala electra	Melon-headed whale		EGTTR
Globicephalus sp.	Short-finned pilot whale		EGTTR
Steno bredanensis	Rough-toothed dolphin		EGTTR
Tursiops truncatus	Bottlenose dolphin		EGTTR
Grampus griseus	Risso's dolphin		EGTTR
Stenella frontalis	Atlantic spotted dolphin		EGTTR
Stenella attenuata	Pantropical spotted dolphin		EGTTR
Stenella coeruleoalba	Striped dolphin		EGTTR
Stenella longirostris	Spinner dolphin		EGTTR
Stenella clymene	Clymene dolphin		EGTTR
Lagenodelphis hosei	Fraser's dolphin		EGTTR

[1] BGEPA=Bald and Golden Eagle Protection Act; CSB=Cape San Blas; EMR=Eglin Mainland Reservation; SRI=Santa Rosa Island; SZ=Surf Zone; MMPA=Marine Mammal Protection Act; EGTTR=Eglin Gulf Test and Training Range.

Other federally protected species such as the West Indian manatee (*Trichechus manatus*) and wood stork (*Mycteria americana*) have been documented on Eglin AFB during seasonal migrations. The American alligator (*Alligator mississippiensis*), which is common on Eglin AFB, is also federally listed due to its similarity in appearance with the endangered American crocodile (*Crocodylus acutus*). Eleven of the federally listed species have recovery plans (RFS, RCW, Okaloosa darter, loggerhead, green [*Chelonia mydas*], Kemp's ridley [*Lepidochelys kempii*], and leatherback [*Dermochelys coriacea*] sea turtles, eastern indigo snake [*Drymarchon corais couperi*], piping plover, Florida perforate lichen [*Cladonia perforata*], and Gulf sturgeon [*Acipenser oxyrinchus desotoi*]). Eglin AFB is a part of the Candidate Conservation Agreement for the gopher tortoise (*Gopherus polyphemus*), which is a candidate for listing as a federally threatened species within its eastern range. Management practices, surveys and status of these species is discussed in more detail in Section 7.4 and in Tab 8—Threatened and Endangered Species Component Plan. Species descriptions and management activities for rare and protected species are discussed in Section 7 of the INRMP and are covered in detail in Tab 8—Threatened and Endangered Species Component Plan.

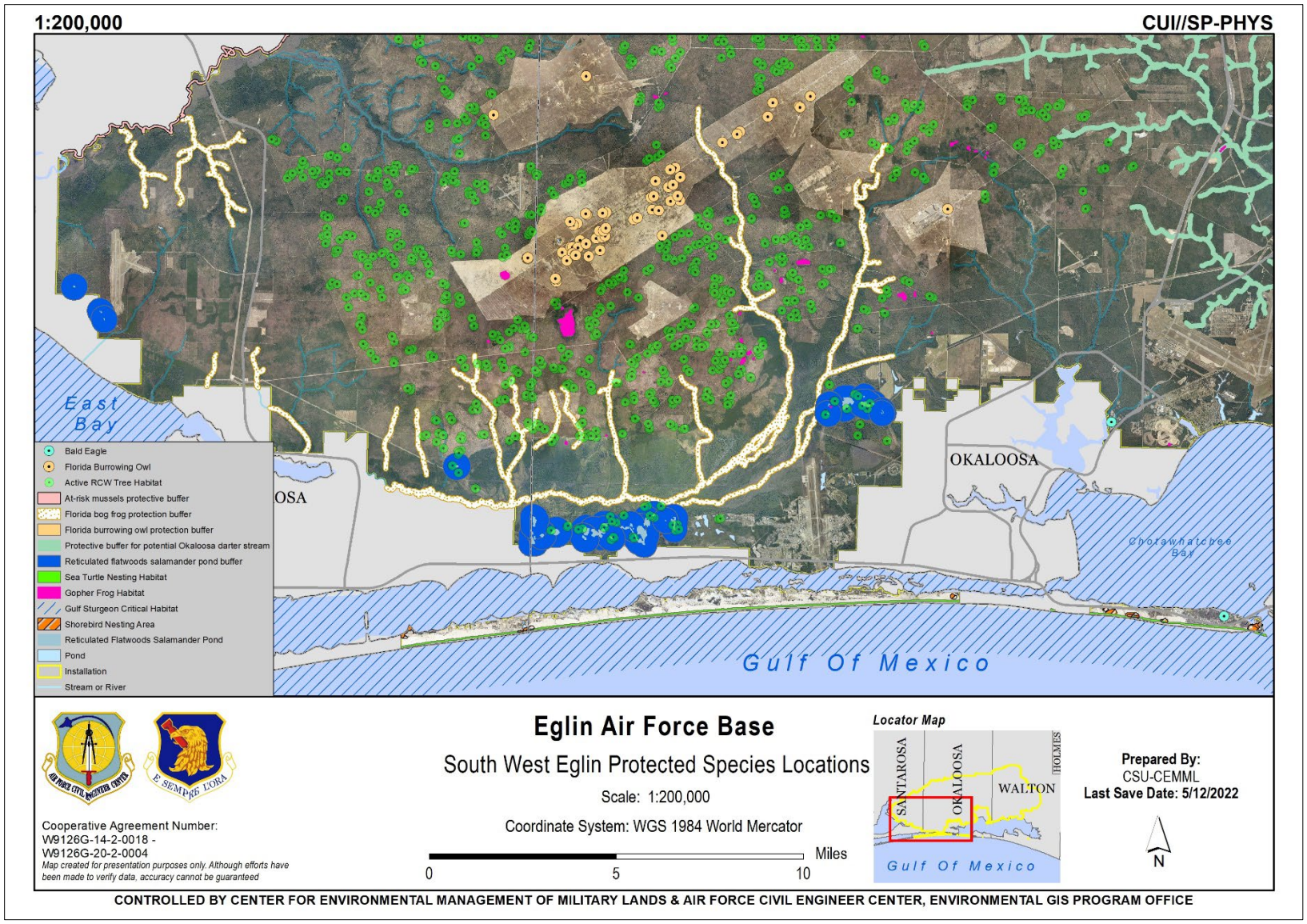

Figure 2-21. Protected species on Eglin Air Force Base (South West).

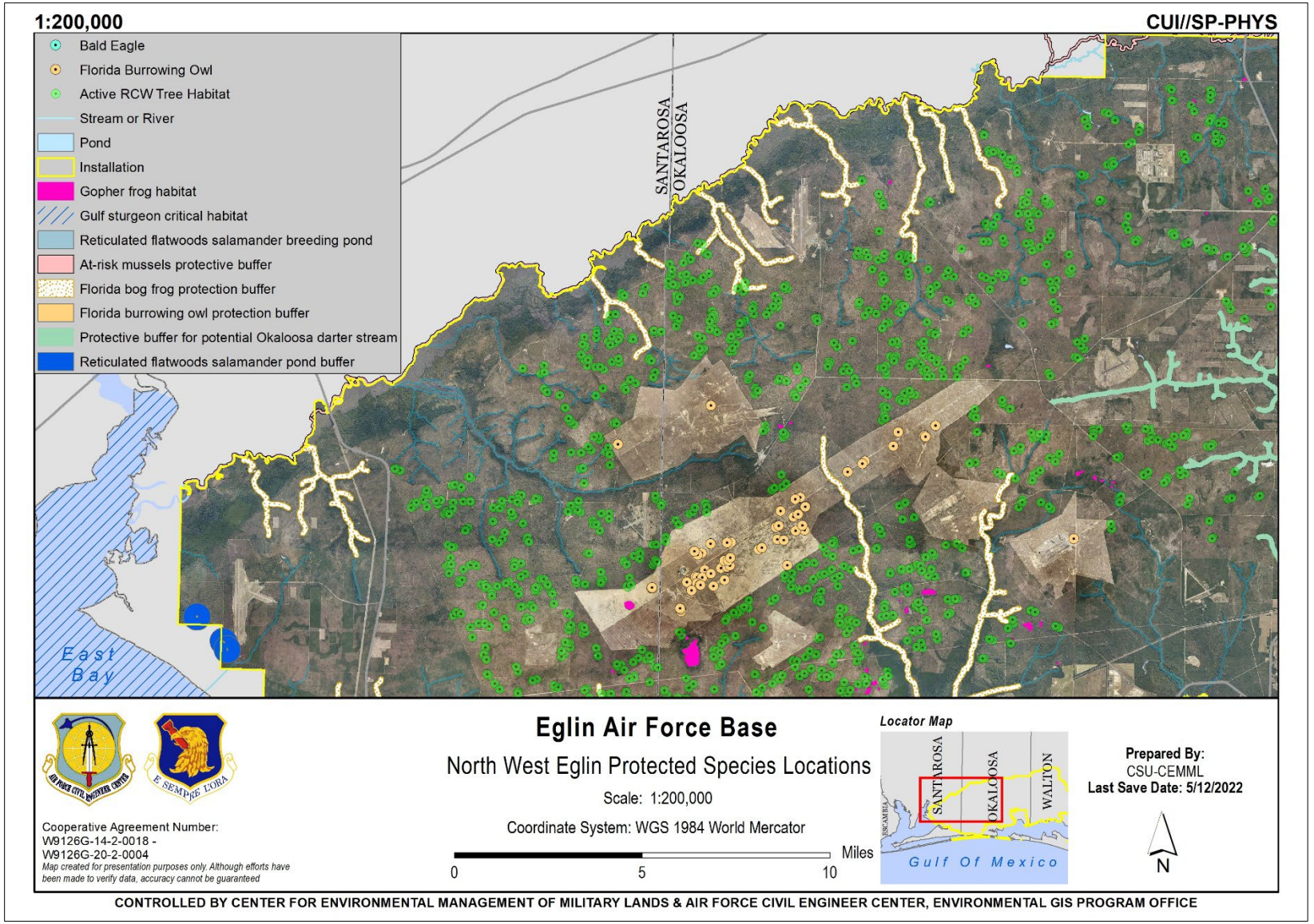

Figure 2-22. Protected species on Eglin Air Force Base (North West).

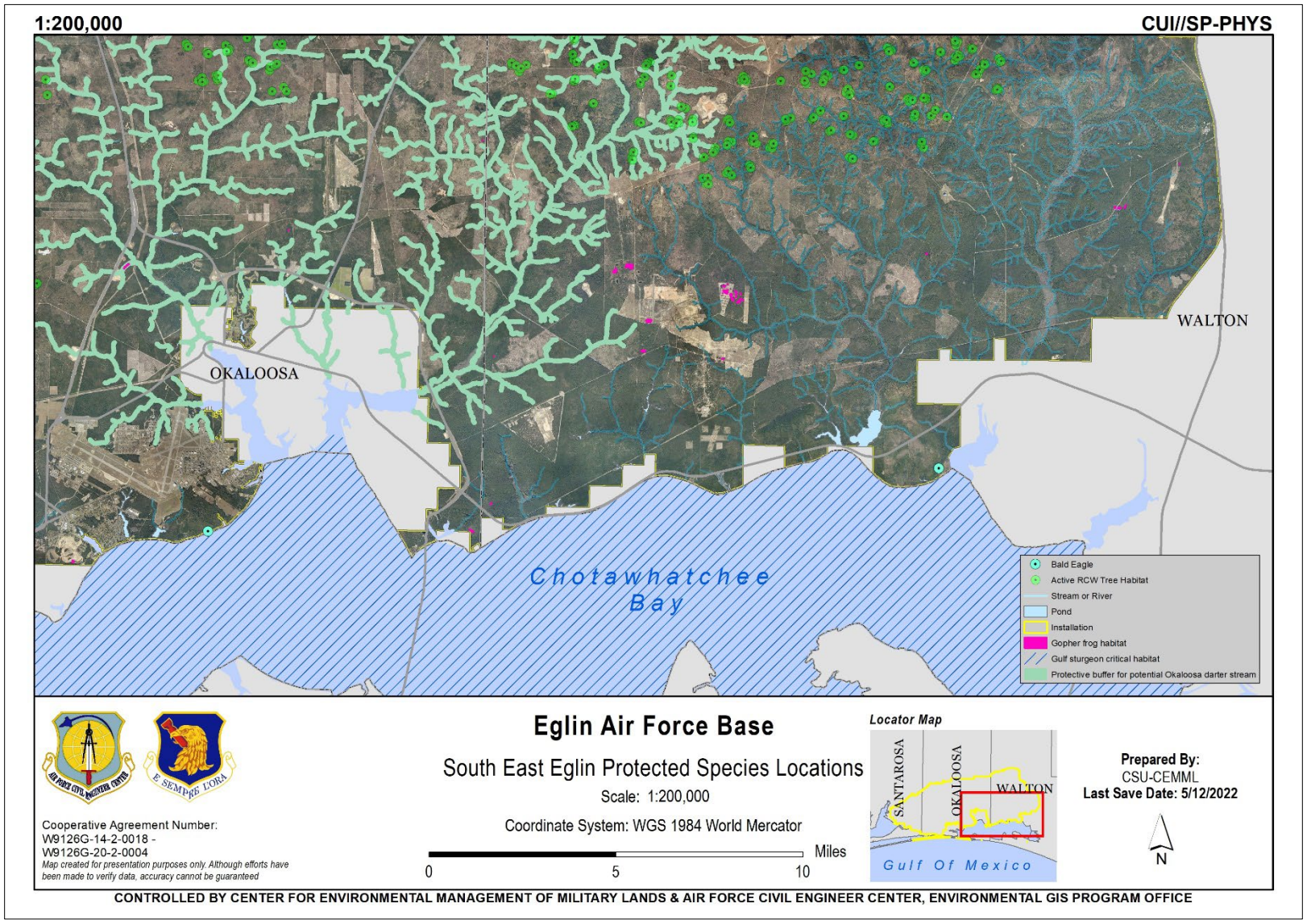

Figure 2-23. Protected species on Eglin Air Force Base (South East).

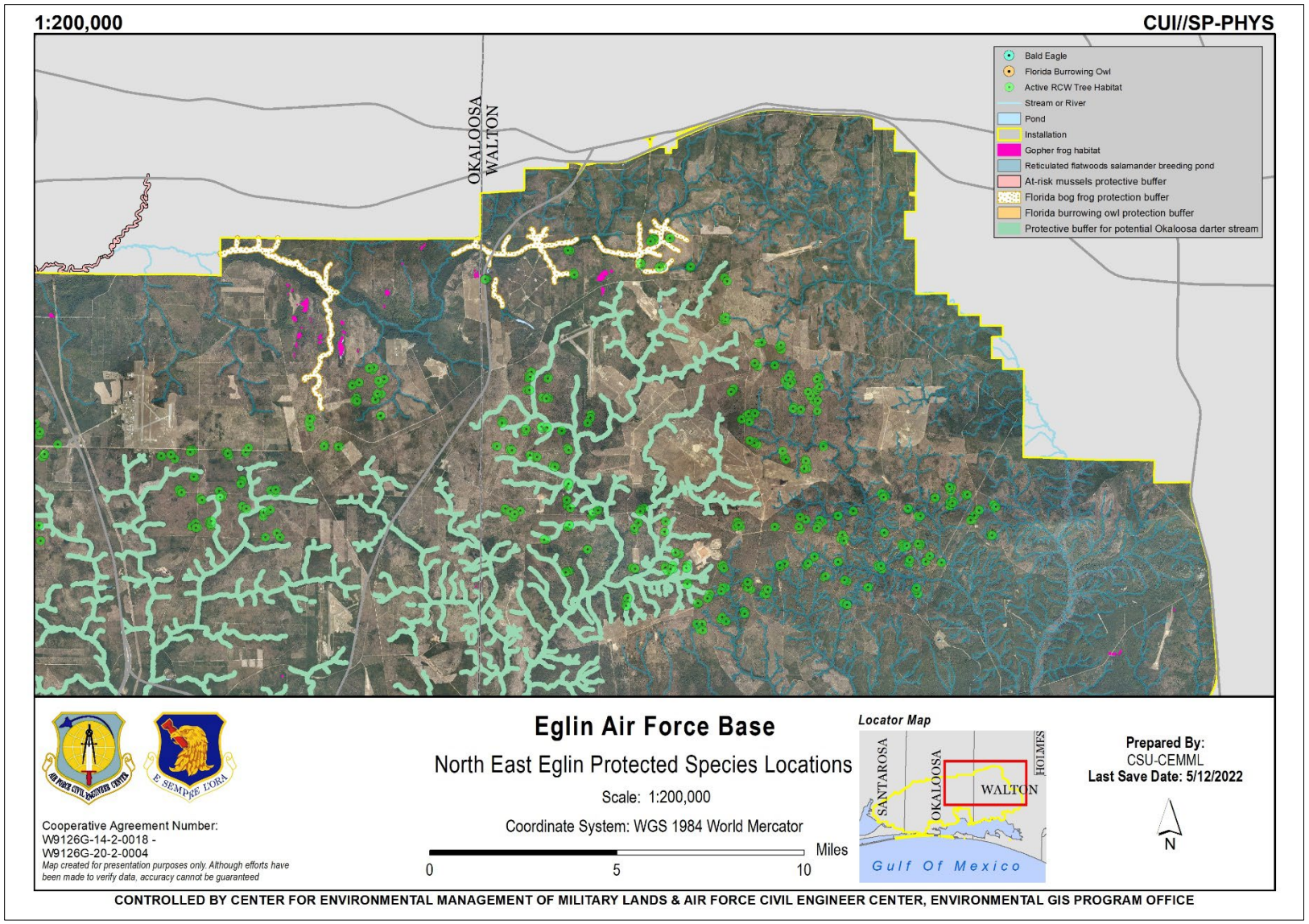

Figure 2-24. Protected species on Eglin Air Force Base (North East).

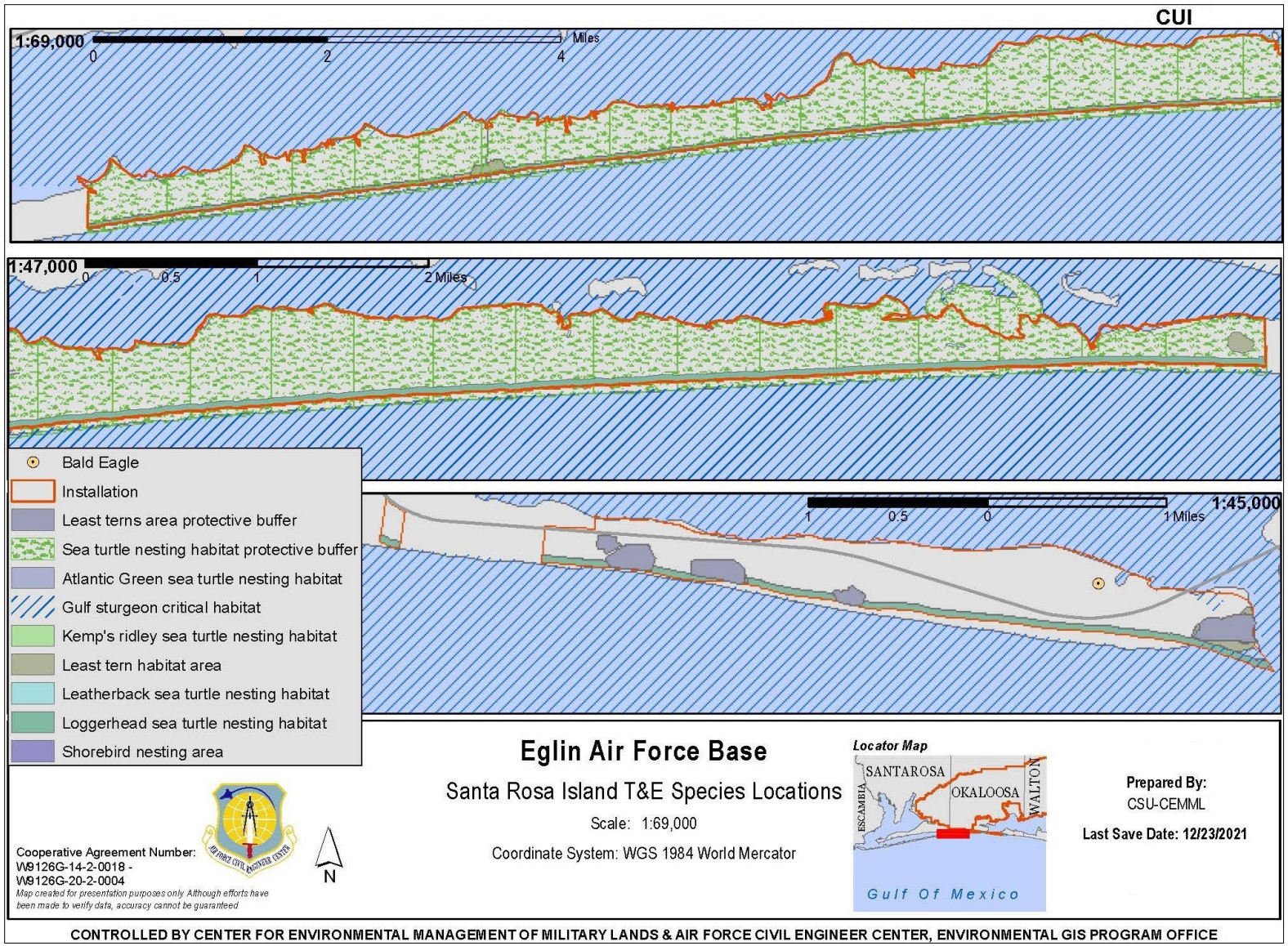

Figure 2-25. Protected species on Santa Rosa Island.

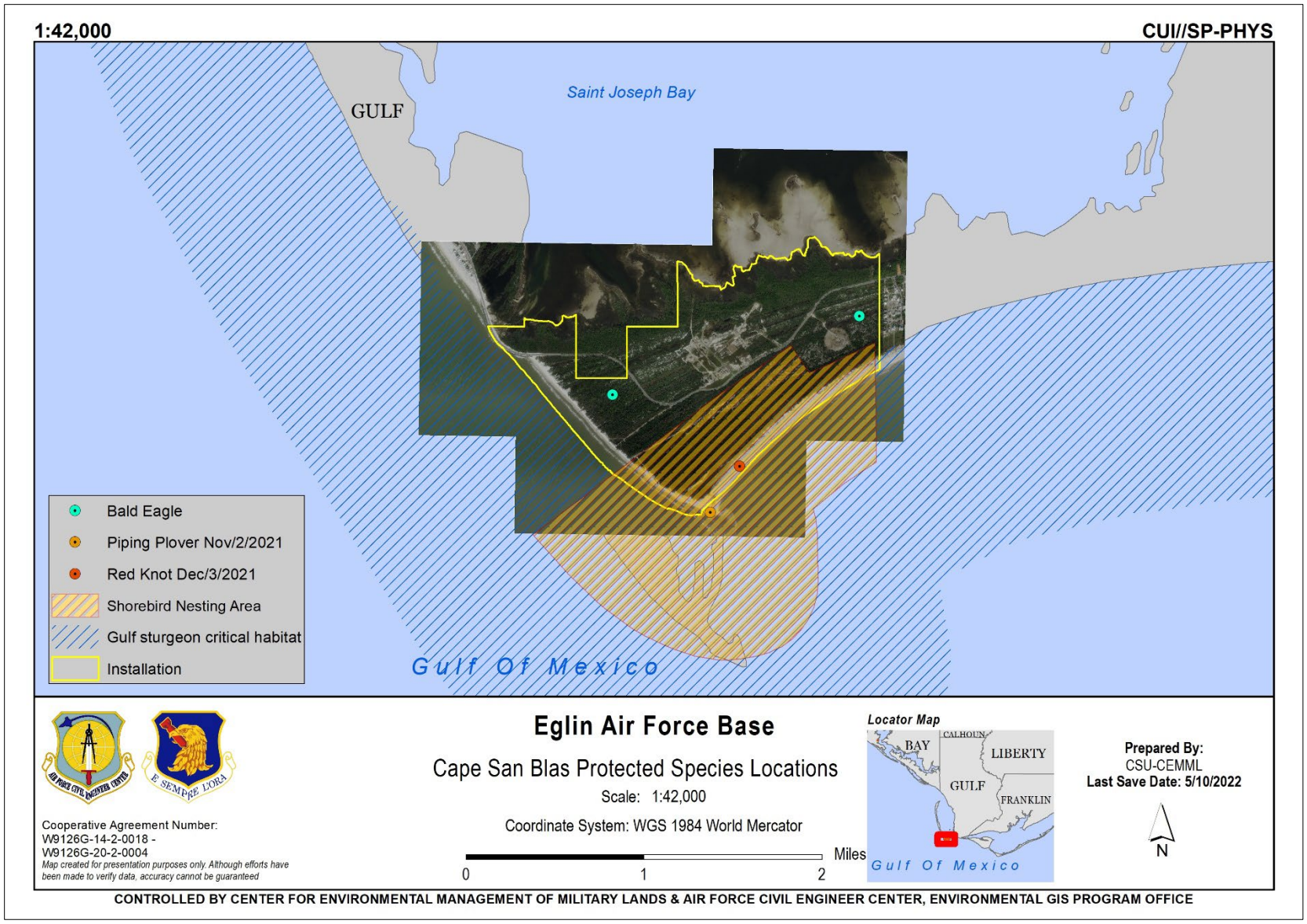

Figure 2-26. Protected species on Cape San Blas.

2.3.4.1 Climate Impacts on Rare and Protected Species

Habitat change and disruption to food availability are two major climate-related threats to all species at Eglin AFB, including rare and protected species. Increases in sea level rise and frequency of hurricanes are additional climate-related threats that can have severe impacts to coastal and dune adapted species. Habitat requirements, such as the need for refugia, may change for some species as they employ behavioral adaptations. Prey populations or forage abundance could be affected by the projected changes in temperature and precipitation. Furthermore, seasonal cues for prey or forage emergence may change, driving a mismatch between food availability and needs of protected species. Populations of certain protected species are further imperiled by life stages that are sensitive to the temperature and precipitation changes projected in the climate scenarios (CEMML 2019).According to a climate change vulnerability assessment conducted for Eglin AFB (CEMML 2019), most of the 17 federally listed species that occur at the installation are expected to be highly (Okaloosa darter and Fuzzy pigtoe) or very highly (piping plover, all sea turtles, reticulated flatwoods salamander, Choctaw bean, Narrow pigtoe, Southern sandshell, and Florida perforate lichen) vulnerable to climate change. Additionally, one candidate species (gopher tortoise), one state-listed species (Florida bog frog), and one FNAI species (Santa Rosa beach mouse) are expected to be highly vulnerable to the projected climate changes. A table of the expected vulnerability risk by species and narrative descriptions of the factors used to arrive at the vulnerability rating are provided in the CSU CEMML Climate Change Report (CEMML 2019, 2022).

2.3.5 Wetlands and Floodplains

2.3.5.1 Wetlands

Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at, or near, the surface, or the land is covered by shallow water (Cowardin et al. 1979). The term wetland encompasses marshes, swamps, bogs, and similar areas. Abiotic and biotic environmental factors such as morphology, hydrology, water chemistry, soil characteristics, and vegetation contribute to the diversity of wetland community types. Local hydrology and soil saturation largely affects soil formation and development, as well as the plant and animal communities found in wetland areas (U.S. Environmental Protection Agency 1995). Wetland hydrology is considered one of the most important factors in establishing and maintaining wetland processes (Mitsch 2000).

These resources are protected under Section 404 of the CWA (33 U.S.C. Section 1344) and at the state level with the Environmental Resources Permit program under Part IV, Florida Statutes, Section 373. Wetlands on federal lands are afforded additional protection under EO 11990, Protection of Wetlands, which sets a goal of “no net loss” of wetlands. The majority of jurisdictional wetlands in the U.S. are identified using three wetland delineation criteria: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology.

The Eglin Reservation supports approximately 65,350 acres of wetlands influenced by seasonal fluctuations in precipitation, overland or near surface flow, shallow groundwater, or some combination of these processes (Figure 2-27, Figure 2-28, and Figure 2-29). While the majority of Eglin AFB’s wetlands are in good condition, some are degraded due to fire suppression or erosion of sediment from roadways, old borrow pits, and on a few sites, from test area vegetation maintenance methods on slopes using choppers. The 96th Civil Engineer Group, Environmental Management Branch (96 CEG/CEIE) is currently addressing many of these issues. Additional information on wetlands is available from the Eglin Environmental Baseline Survey Resource Appendices (USAF 2003).

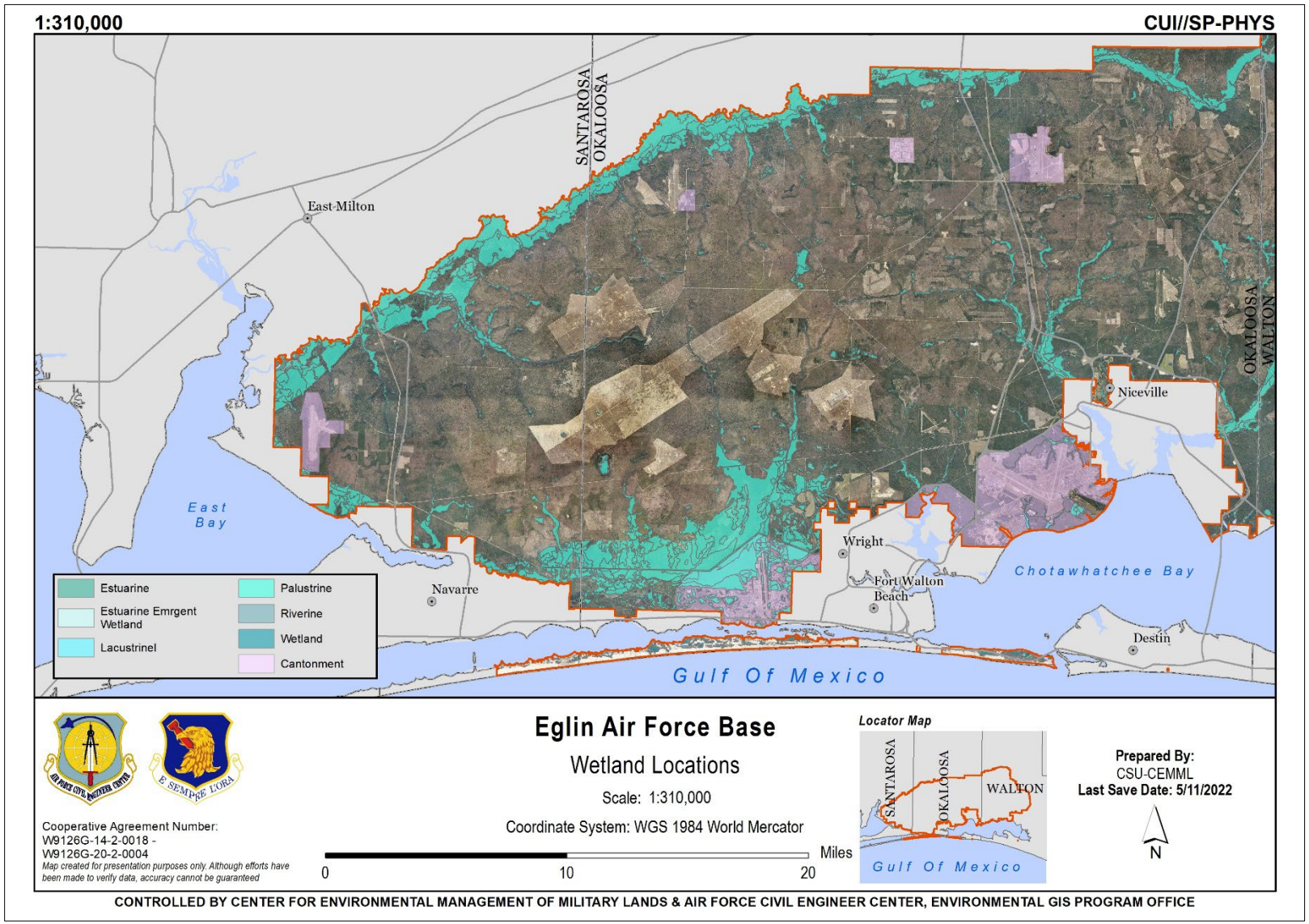

Figure 2-27. Wetland locations on Eglin Air Force Base (West).

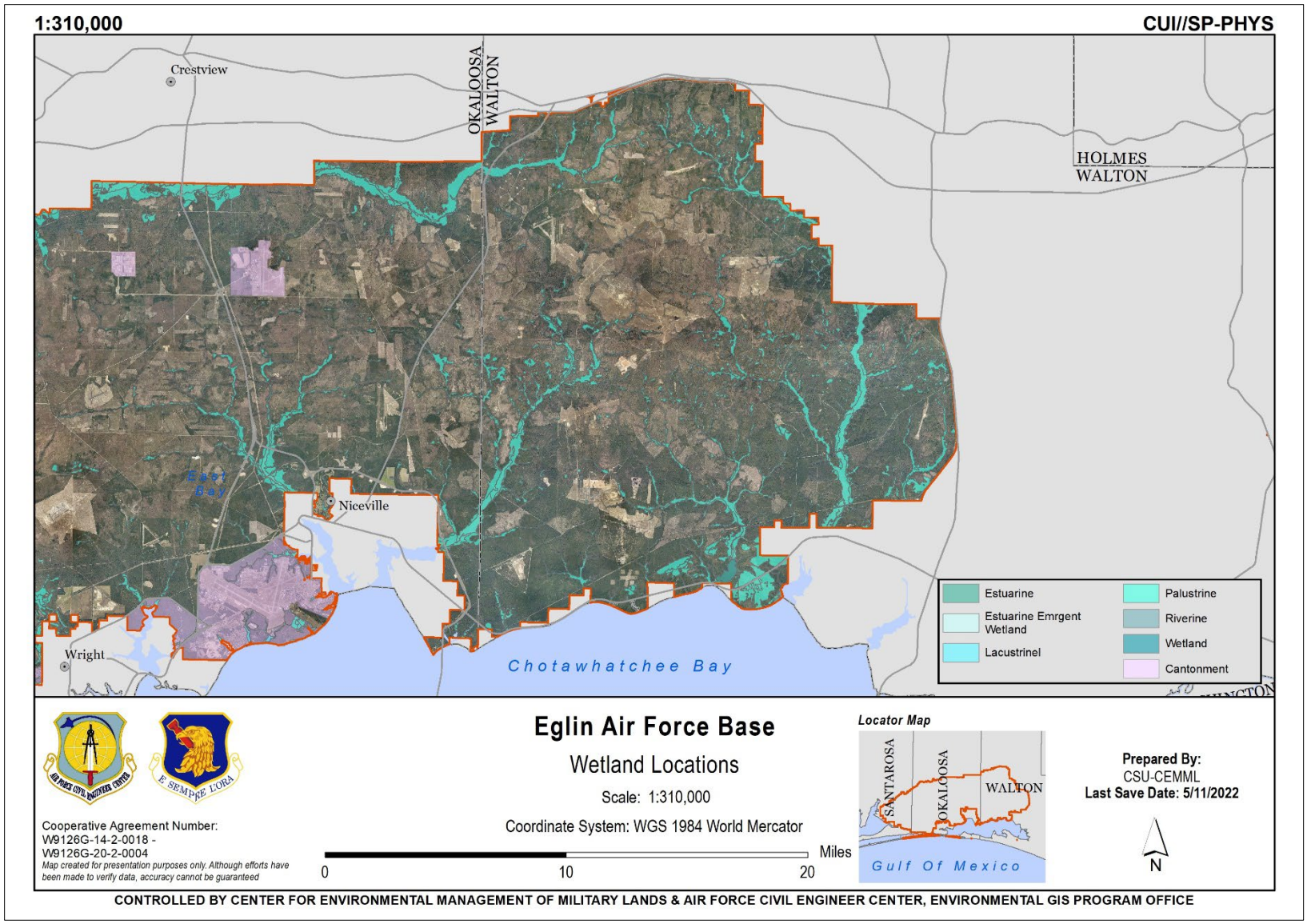

Figure 2-28. Wetland locations on Eglin Air Force Base (East).

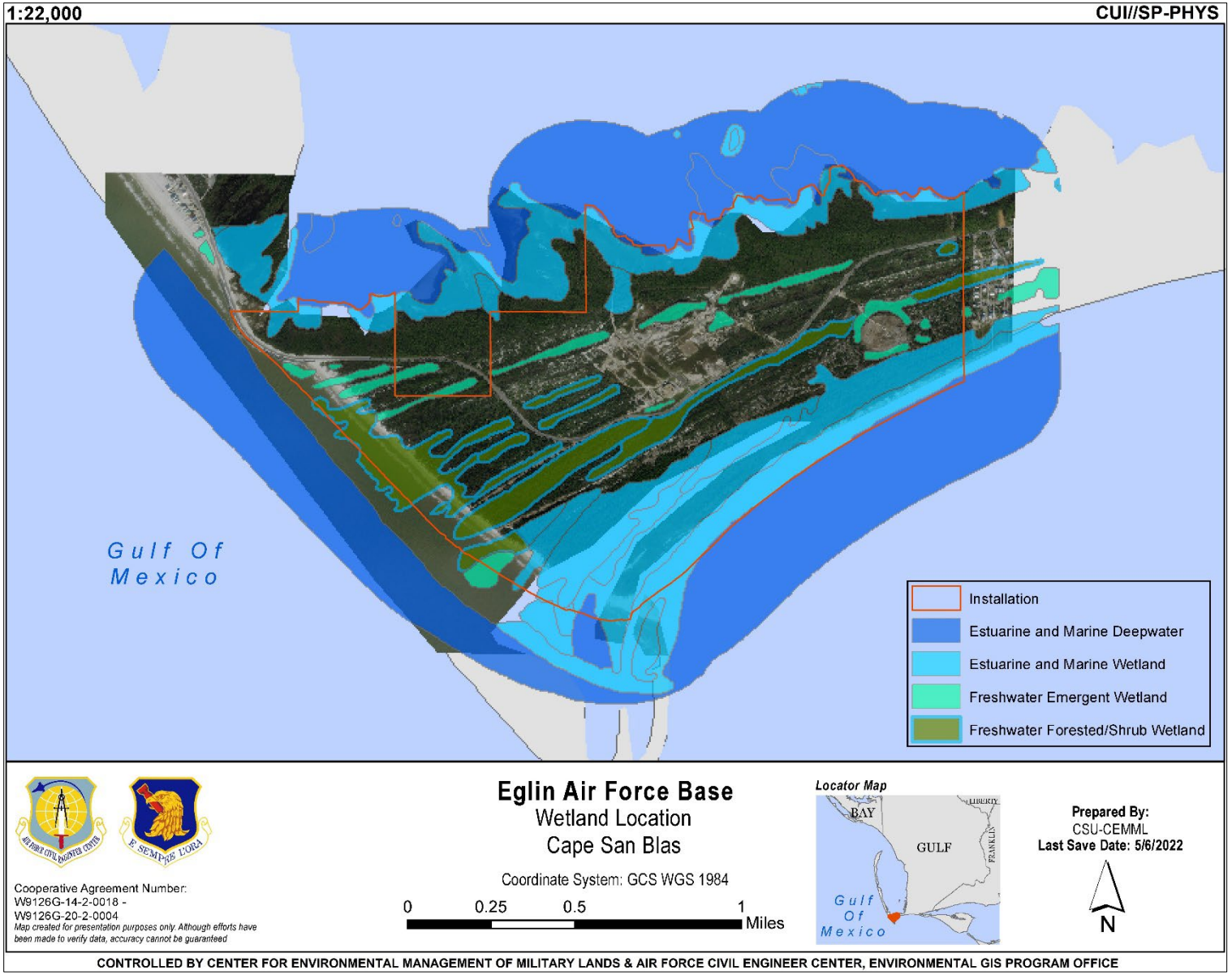

Figure 2-29. Wetland locations on Cape San Blas.

On the main Reservation (including SRI), the following wetland types exist: baygall, seepage slope, dry prairie, flatwood lake, floodplain forest, floodplain swamp, bottomland forest, wet prairie, hydric hammock, blackwater stream, alluvial stream, spring run stream, seepage stream, marsh lake, slough, dome swamp, strand swamp, basin marsh, depression marsh, floodplain marsh, sandhill upland lake, bog, freshwater tidal swamp, and salt marsh (USAF 2003). Wetland types at CSB include tidal swamp and salt marsh. Wetlands are also discussed in Section 7.6.

Wetlands are among the most productive ecosystems in the world providing food and shelter for many different species. Wetlands also provide a host of ecologically important functions such as groundwater recharge, flood control, shoreline protection, and watershed protection. The National Wetlands Inventory (NWI) Classification for Wetlands (Cowardin 1979) describes wetland habitats based on factors such as hydrologic and geomorphic features, and chemical and biological characteristics. Table 2-12 shows the number of acres for each category on the Eglin Reservation. The five wetland categories in this classification system are as follows.

- ***Estuarine***—Deepwater tidal habitats and adjacent tidal wetlands that are usually semi enclosed by land but have open, partly obstructed, or sporadic access to the ocean, with ocean water at least occasionally diluted by freshwater runoff from the land. The upstream and landward limit is where ocean derived salts measure less than 0.5 parts per thousand (ppt) during the period of average annual low flow. The seaward limit is (1) an imaginary line closing the mouth of a river, bay, or sound, and (2) the seaward limit of wetland emergents, shrubs, or trees when not included in (1).
- ***Riverine***—All wetlands and deepwater habitats contained within a channel except those wetlands (1) dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) which have habitats with ocean-derived salinities in excess of 0.5 ppt.
- ***Lacustrine***—Wetlands and deepwater habitats situated in a topographic depression or dammed river channel, (1) lacking trees, shrubs, persistent emergents, emergent mosses, or lichens with greater than 30 percent area coverage, and (2) whose total area exceeds eight hectares (20 acres), or area less than eight hectares if the boundary is active wave-formed or bedrock or if water depth in the deepest part of the basin exceeds two meters (6.6 feet) at low water. Ocean-derived salinities are always less than 0.5 parts per trillion.
- ***Palustrine—***All nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and all such tidal wetlands where ocean-derived salinities are below 0.5 ppt. This category also includes wetlands lacking such vegetation but with all of the following characteristics: (1) area less than eight hectares, (2) lacking an active wave formed or bedrock boundary, (3) water depth in the deepest part of the basin less than two meters (6.6 feet) at low water, and (4) ocean derived salinities less than 0.5 ppt.
- ***Marine***—Open ocean overlying the continental shelf and coastline exposed to waves and currents of the open ocean shoreward to (1) extreme high water of spring tides, (2) seaward limit of wetland emergents, trees, or shrubs, or (3) the seaward limit of the estuarine system, other than vegetation. Salinities exceed 30 ppt.

The 96th Civil Engineer Group, Environmental Management Branch (96 CEG/CEIE) is the established POC for all regulatory issues involving wetland resources. Any areas recently surveyed for wetlands (and approved by federal/state regulatory agencies) are entered into Eglin's Enterprise Spatial Database to aid in future land use management.

Table 2-12. Wetland areas of Eglin Air Force Base.

Wetland Type	Wetland Areas of Eglin Air Force Base		
	Eglin Reservation	Santa Rosa Island	Cape San Blas
Estuarine	657.60	141.17	136.47
Riverine	265.44	0	0
Lacustrine	180.37	0	0
Palustrine	62,798.13	778.40	247.31
Marine	0	0	145.41
TOTAL	**63,901.54**	**919.57**	**529.19**

2.3.6 Other Natural Resource Information

For information on other biological inventories and surveys not covered in the previous sections, refer to the CP for that particular resource area.

2.3.6.1 Changes in Ecological Condition of Upland Habitats

With the aggressive prescribed fire program, sand pine removal, and reforestation activities, the ecological condition of upland habitats on Eglin AFB has dramatically improved. Eglin AFB has invested a significant level of effort over the course of many years to achieve this condition, which has enhanced military mission flexibility and decreased timeframes for permits, Section 7 consultations, and other natural resources requirements. The areas of management and greatest change in tier value and improvements in ecological condition focus on the CCA. The shift in ecological condition reflects an increase in frequently burned longleaf pine forests and a decrease in the amount of invasive sand pine and fire suppressed areas.

2.3.6.2 Ecosystem Services

The natural environments on Eglin AFB provide numerous ecosystem services. It is difficult to assign a monetary value to the majority of these services, so many times they are not adequately valued against other competing demands that provide a clear economic benefit. For the cost of a general recreation permit, members of the public can enjoy a multitude of recreational activities, including swimming, hiking, biking, canoeing, and just the simple pleasure of listening to calling frogs at sunset by the creek. Hunting and fishing opportunities provide both recreational and provisioning services. The same forests and waters used by recreationists also provide supporting services such as nutrient cycling, water filtration, air purification, and pollination opportunities. The activities detailed in this INRMP strive to maintain and improve these valuable ecosystem services.

2.4 Mission Impacts on Natural Resources

2.4.1 Natural Resource Constraints to Mission and Mission Planning

Constraints are considered to be anything that causes restrictions on the mission. In some cases, the presence of federally protected species, water resources, or sensitive habitats may limit the types or degree of activities in an area, but rarely are mission activities completely restricted due to natural resource issues. Early consideration of these issues in planning typically results in solutions where the mission can proceed unimpeded, either through slight modifications in location or timing, by implementing requirements from

an existing programmatic consultation, or by obtaining permits through the appropriate regulatory channels that allow the potential for negative impacts to the resource (i.e., ESA Section 7 consultation); however, for some quick-response tasks, early planning is not an option; in these situations, efforts are made to accommodate the mission while minimizing environmental impacts. Missions may also be affected on days with high fire danger when "hot" missions may be restricted, or in situations where missions are shut down or delayed due to smoke or fire suppression activities.

High-resolution spatial information is available for most natural resources on the Reservation, but in some cases, mission planners may not know how to access it or how to interpret it. It is necessary to couple the map locations with the list of requirements associated with the resource to plan the best way forward for making the mission happen. Eglin NRS continues to work with mission planners to bridge the information gap and obtain any regulatory permits necessary to conduct the mission in a timely manner. Again, early planning is the key to making these resources "considerations" rather than "constraints."

2.4.1.1 Spatial, Temporal, and Cost Considerations

There are seasonal natural resource considerations for sea turtle, shorebirds, RCW, piping plover, red knot, bald eagle, RFS, Okaloosa darter, and Gulf sturgeon (Table 2-13) For many of these protected species, shifting the timing of a mission to outside of the nesting or foraging season results in few to no requirements. Other times, the consideration may be location; oftentimes a simple shifting of 100 feet or a modification to the extent of the activity will solve location conflicts. Figure 2-21, Figure 2-22, Figure 2-23, Figure 2-24, Figure 2-25, and Figure 2-26 show the locations of natural resources that may be considerations for mission planning due to their sensitive nature. The example area in Figure 2-30 shows some of the requirements that may be associated with certain natural resources.

Table 2-13. Seasonal considerations for protected species.

Species	Location	Seasonal Considerations
Sea Turtles	Santa Rosa Island (SRI), Cape San Blas (CSB)	May 1–October 31
Shorebirds	SRI, CSB	March 1–August 31
Piping Plover, Red knot	SRI, CSB	July–May
Red-cockaded Woodpecker	Mainland Reservation	April–July
Bald Eagle	Main Base, CSB, SRI	1 October–15 May
Reticulated Flatwoods Salamander	South of East Bay River	October–January
Gulf Sturgeon	Gulf of Mexico	October–April
	Rivers and Bays	May–September
Okaloosa Darter	Mainland Reservation	March–October

Eglin AFB has not had a mission denied based on protected species impacts since the 1990 Jeopardy Opinion Eglin AFB received because it did not have sufficient survey information on RCW locations. Eglin AFB now has excellent location information on its rare and protected species, so the only limitation is the time it takes to conduct consultations with the appropriate regulators to receive permission to "take" (harm, harass, or kill) a protected species. Early coordination between mission planners and NR allows NR to

initiate these sometimes lengthy consultations in a timely manner to avoid mission delays. Due to NR efforts to conduct programmatic consultations, many missions do not have to go through the consultation process at all, as long as the mission follows requirements from the programmatic consultation; however, for missions that do require a new consultation, planners should allow anywhere from two months to over a year for consultation, depending on the type of activity and its location. For example, consultations for underwater detonations in the Gulf of Mexico typically take at least a year due to the presence of protected species, particularly marine mammals.

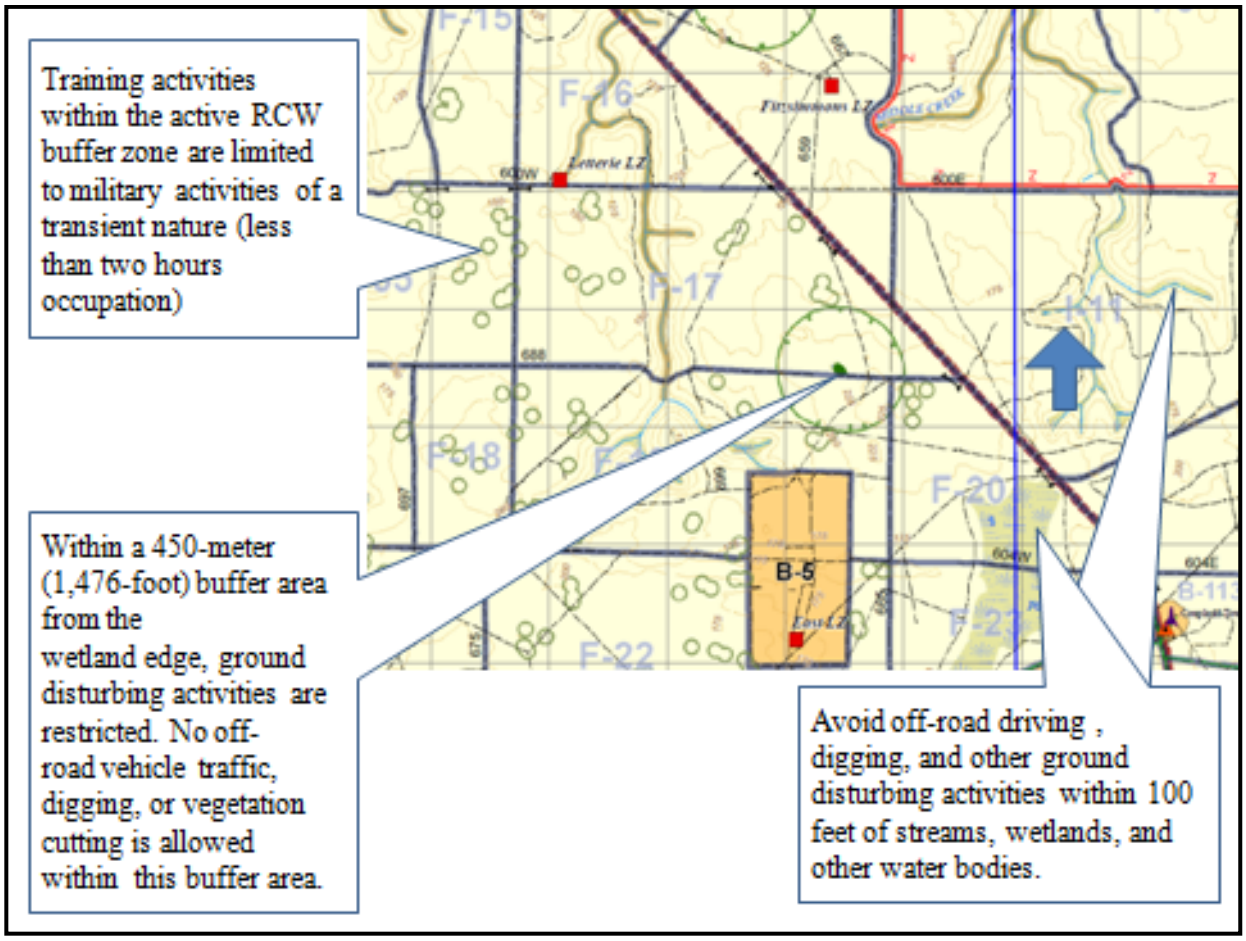

Figure 2-30. Example of range constraints.

Missions with consultation requirements, either from a programmatic or a new consultation, may also consider the costs associated with the requirements coming out of the consultations to be constraints. Consultations typically have Conservation Measures or Terms and Conditions (T&C) that must be implemented as part of the action in order receive protective coverage under the ESA and/or MMPA, and the cost to implement some of these requirements may be high, such as the added cost of observers whose responsibility it is to watch for protected species during the mission. Most consultation requirements, however, are just avoidance or minimization and involve relatively little expense. If the funds to cover the

costs of management requirements are not budgeted or are unavailable, adjustments to the mission for relief is a viable option.

2.4.1.2 Down-listing and Recovering Species for Mission Flexibility

The loss of protected species or important habitats in the immediate vicinity of Eglin AFB can increase constraints on the military mission by increasing the natural resource management responsibilities of the USAF. As natural resources are depleted outside of the Eglin Reservation, those within the Reservation become more valuable and must be managed more carefully. One of the ways that Eglin NRS supports the military mission is by assisting with down-listing efforts and recovering populations of protected species. Eglin AFB has more mission flexibility through decreased requirements, considerations, and/or constraints to the mission. This has been realized at Eglin AFB with the proposed de-listing of the Okaloosa darter and the downlisting of the RCW (USFWS 2021, 2022) which is expected later in 2022. A decrease in requirements and an increase in mission flexibility has been accomplished. Fewer Section 7 consultations and training restrictions further enable the mission. For example, Eglin AFB completed a Section 7 consultation for the RCW with the USFWS resulting in a Programmatic Biological Opinion (PBO) that covers most mission and management activities on the installation as long as the action falls within the parameters of the Biological Opinion (BO); this has resulted in more rapid processing of proposed actions that may affect RCWs.

2.4.1.3 Natural Resource Requirements

The environmental requirements developed through the EIAP or brought forward by other regulatory drivers are mandatory. Personnel and unit commanders may be held personally liable for violations of environmental statutes and regulations. Failure to follow these requirements may constitute a violation of federal and state environmental laws. The requirements listed in this section are not all-inclusive; additional guidance can be found in Eglin Air Force Base Instruction (EAFBI) 13-212, *Range Planning and Operations*, the Santa Rosa Island Environmental Guidebook for Test and Training Activities (Appendix Environmental Guidebooks), the Mainland Environmental Guidebook for Test and Training Activities (Appendix Environmental Guidebooks), T&C Database, Environmental Restrictions Tracking Tool (ERTT), as well as individual consultations conducted for particular missions. A highlighted list of ESA and MMPA consultations and permits can be found in Table 2-14. Adherence to these requirements helps maintain quality environments for future testing and training missions and ensures that Eglin AFB is in compliance with all applicable state and Federal regulations. Examples of natural resources requirements include

- Cutting of longleaf pine trees is prohibited;
- Training activities within 200 feet of a RCW cavity tree is limited to activities of a transient nature (less than two hours of occupation); additional RCW buffer zone requirements apply and are detailed in the Management Guidelines for the RCW on Army Installations (U.S. Army 2007);
- Avoid ground disturbing activities within buffer areas (Figure 2-31);
- Avoid activities within marked protected species habitat on SRI (i.e., piping plover, perforate lichen);
- Avoid activities on dunes five feet or higher and avoid damage to dune and shoreline vegetation; and
- Beachfront activities occurring between May 1 and October 31 must follow numerous requirements to avoid impacts to sea turtles (refer to EAFBI 13-212 for details). Sea turtles are sensitive to noise, light, and ground disturbing activities. Additional requirements apply to Gulf missions (refer to EAFBI 13-212 for details).

Table 2-14. Currently active Eglin Air Force Base consultations*.

Consultation Title	Location(s)
Mission Activities	
2005 Base Realignment and Closure (BRAC) Decisions and Related Actions at Eglin Air Force Base/BRAC Supplemental Environmental Impact Statement	All**
Amphibious Ready Group/Marine Expeditionary Unit Training	
Advanced Littoral Reconnaissance Training	SRI
Santa Rosa Island (SRI) and Cape San Blas (CSB) Testing and Training Activities Programmatic	
Eglin Gulf Test and Training Range (EGTTR) Programmatic and Letter of Authorization	Gulf of Mexico
Gulf Range Enhancement	
D-84 Waterside Redevelopment Activities	Bay
Estuarine and Riverine Areas Programmatic	Bays, Santa Rosa Sound, and Rivers
Interstitial Areas Programmatic	Mainland
Red-cockaded woodpecker (RCW) Programmatic and Amendment	
Air and Ground Gunnery Programmatic	Mainland
Test Area C-52 Programmatic	
Test Areas B-71 and B-82 Programmatic	
Test Areas B-12 and B-70 Programmatic	
Ranges B-88 and C-53A Programmatic	
Range Road 218 Range D-51 Bypass	
Overland Air Operations	
Construction, Road, and Lessee Projects	
Northern Access Initiative	Mainland
GCSC I, LLC (Solar Array)	
Widening State Road 123	
Darter Creek Bridges Vegetation Maintenance	
Road-Stream Crossing Elimination and Replacement	
Borrow Pits	
Gulf Power, PowerSouth Right-of-Way Herbicides	
High Explosives Research and Development Complex	
Choctawhatchee Electric Cooperative, Inc., Easement Herbicides	
East Pass Destin Corps Dredge Spoil	SRI
Chelco Powerline pole removal and replacement in *Cladonia* habitat	
Destin Fireworks	
Emerald Breeze Resort	
Natural Resources Activities	
Integrated Natural Resources Management Plan Biological Opinion	All
Invasive Non-native Plant Species Herbicide Treatment	Mainland, SRI, CSB
Hardwood Control in Flatwoods Salamander Ponds	Mainland

Table 2-14. Currently active Eglin Air Force Base consultations*.

Consultation Title	Location(s)
Mission Activities	
Salamander Habitat Fences and Firebreaks	
Salamander Habitat Restoration	
Eastern Indigo Snake Programmatic	
Long-Term Vegetation Control	
Velpar Use	
Anderson Pond Herbicide	
A-21 Fuel Break	
Gyrotrac/Positrack Fuel Break	
Gopher Tortoise Programmatic Conference Opinion	Mainland, SRI, CSB

* Consultations are Biological Assessments unless otherwise noted as an Incidental Harassment Authorization or Letter of Authorization.

** All=SRI, Mainland, Gulf of Mexico, Yellow River, Santa Rosa Sound, Choctawhatchee Bay.

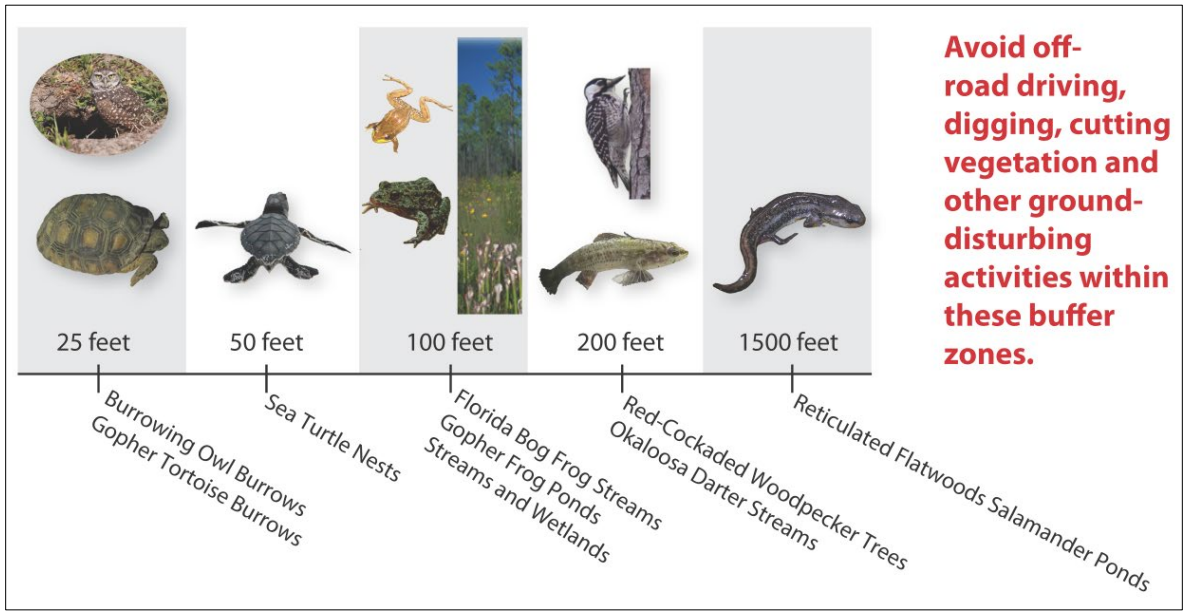

Figure 2-31. Established buffer zones for protected species at Eglin Air Force Base (2017).

2.4.1.4 Integrating Natural Resources Management and Military Mission

As mission support is the primary driver for NR, integration with military planners and operators is essential to success. To ensure optimal mission support and reduce undesired mission impacts, NR participates in Range Configuration Control Committee (RC3), Installation Mission Sustainment Team (IMST), Maintenance of Land Test and Training Areas Program, and Unit Environmental Coordinator (UEC)

meetings (Figure 2-32). To de-conflict management and mission activities, NR provides these groups with briefings on proposed and existing land management, monitoring, and research activities, as well as specific natural resource topics of interest such as protected species compliance on an as-needed basis, but at least annually. Eglin NRS also conducts Air Armament Academy courses on natural resource issues including ESA and prescribed fire.

2.4.1.5 Environmental Impact Analysis Process, Endangered Species Act, Essential Fish Habitat, and Marine Mammal Protection Act Consultations

Proponents with new proposed actions with the potential for environmental impacts must submit an Air Force Form 813 for environmental review through the EIAP. The Environmental Impact Analysis Review Group, which is composed of organizations such as natural resources, safety, hazardous materials, cultural, and others, evaluates the action for environmental impacts, determines whether any new permits are needed, and conveys environmental requirements to the proponent in the Comment box on the 813 or in an attachment to the 813 (which goes back to the proponent upon approval) (Figure 2-33). Eglin NRS assesses potential impacts of proposed mission activities to natural resources with special emphasis on protected species, their habitats, and wetlands.

During this process, NR serves as the liaison between the proponent and the regulatory agencies (USFWS and NMFS), and manages the ESA Section 7, MSA, EFH, and MMPA consultations for proponents. Before beginning any consultations, NR works with the proponent to determine if the mission fits under a pre-existing or programmatic consultation or if there are ways to adjust location, timing, or types of activities to avoid or minimize impacts to protected species and their habitats, thus avoiding the need for consultation or reducing the requirement to only an informal consultation (Figure 2-34). In many cases, agreement to follow mission avoidance and minimization measures (self-imposed T&C) has allowed the missions to either avoid the need for consultation, or to consult informally rather than formally, which reduces the regulatory agency required response time from 135 to 30 days. This has decreased regulatory review time as well as resulted in expedient customer support.

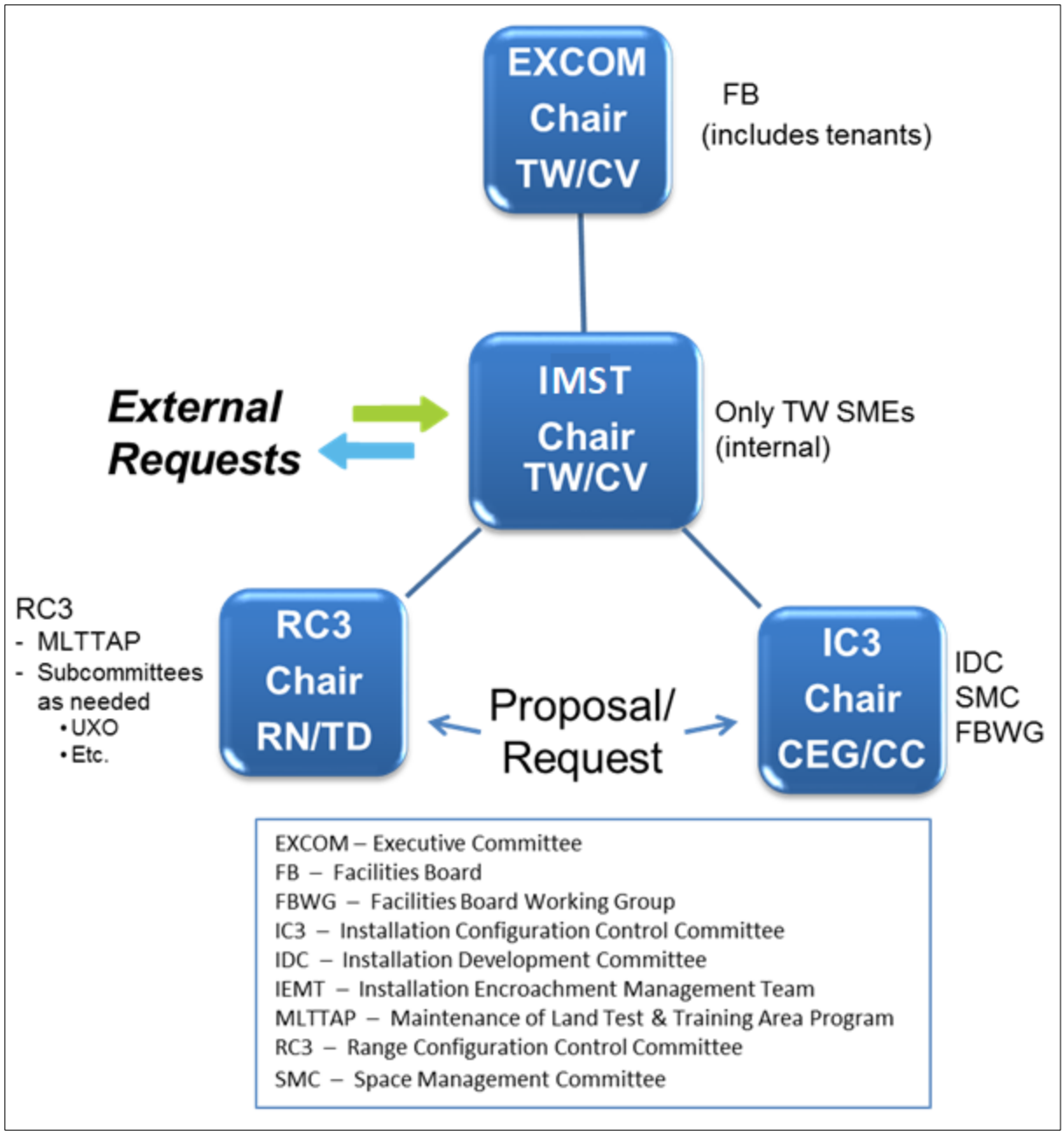

Figure 2-32. Eglin Test and Training Complex Range planning process.

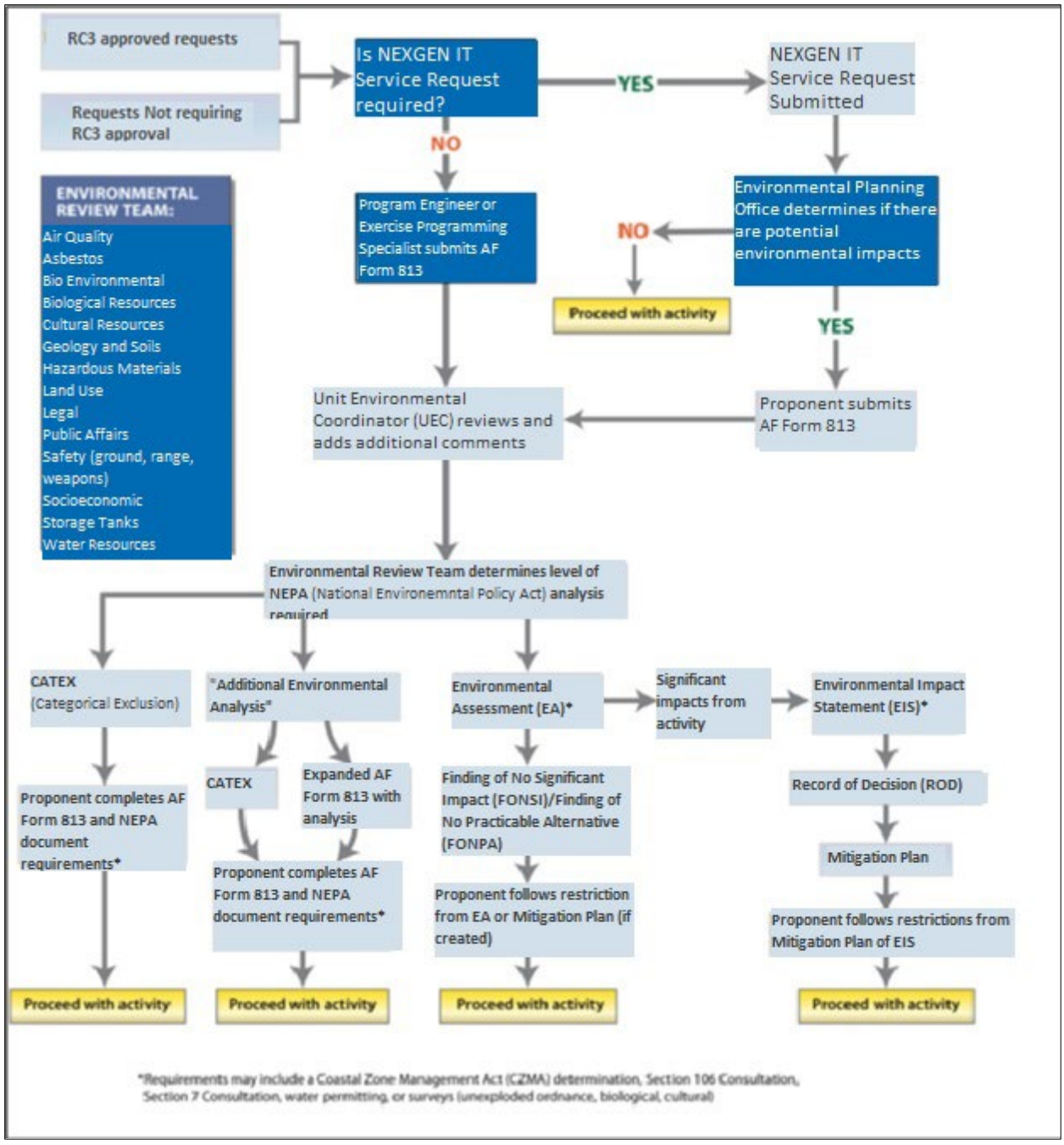

Figure 2-33. Environmental Impact Analysis Process.

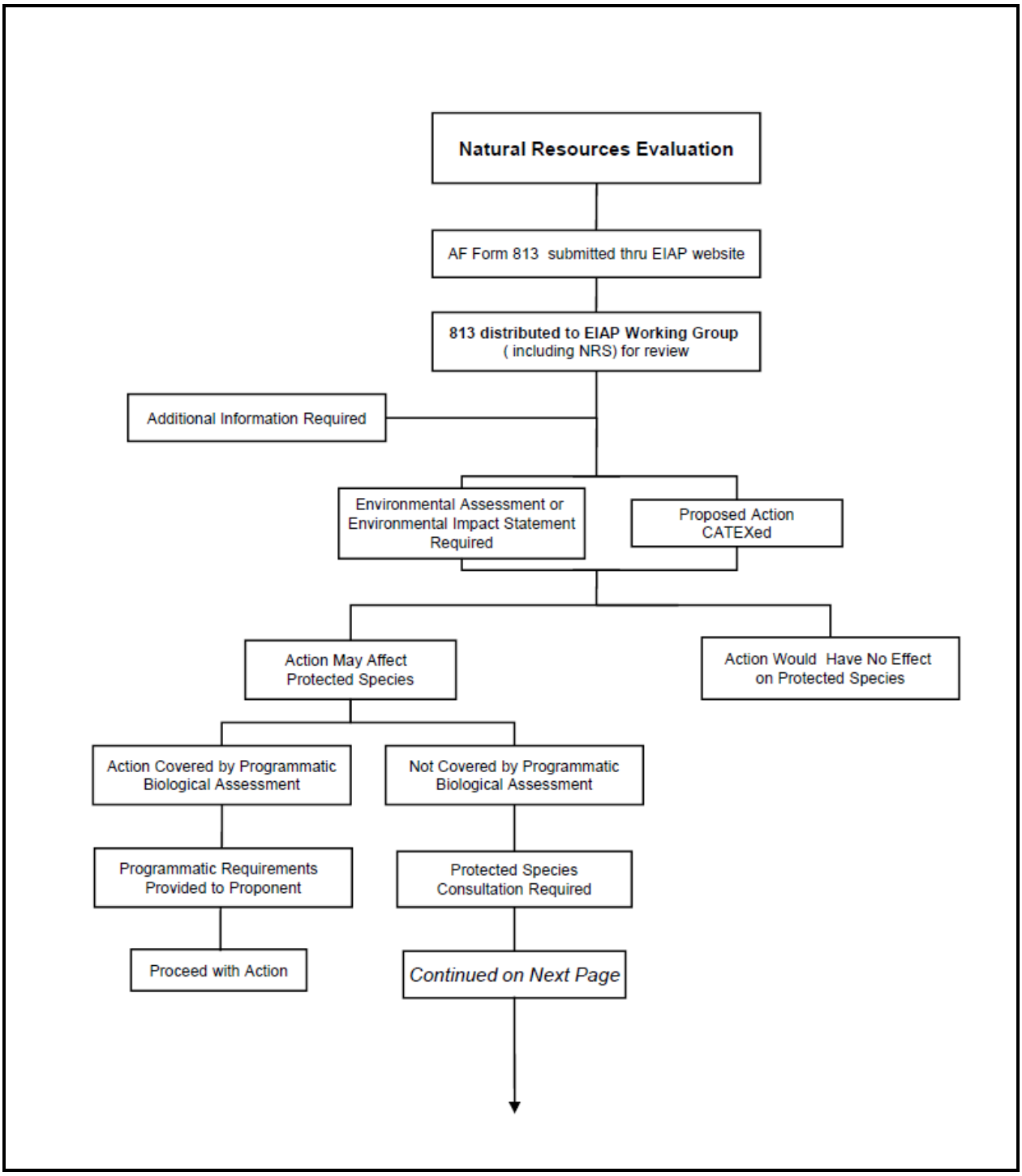

Figure 2-34a. Mission delay avoidance process (continued on the next page.)

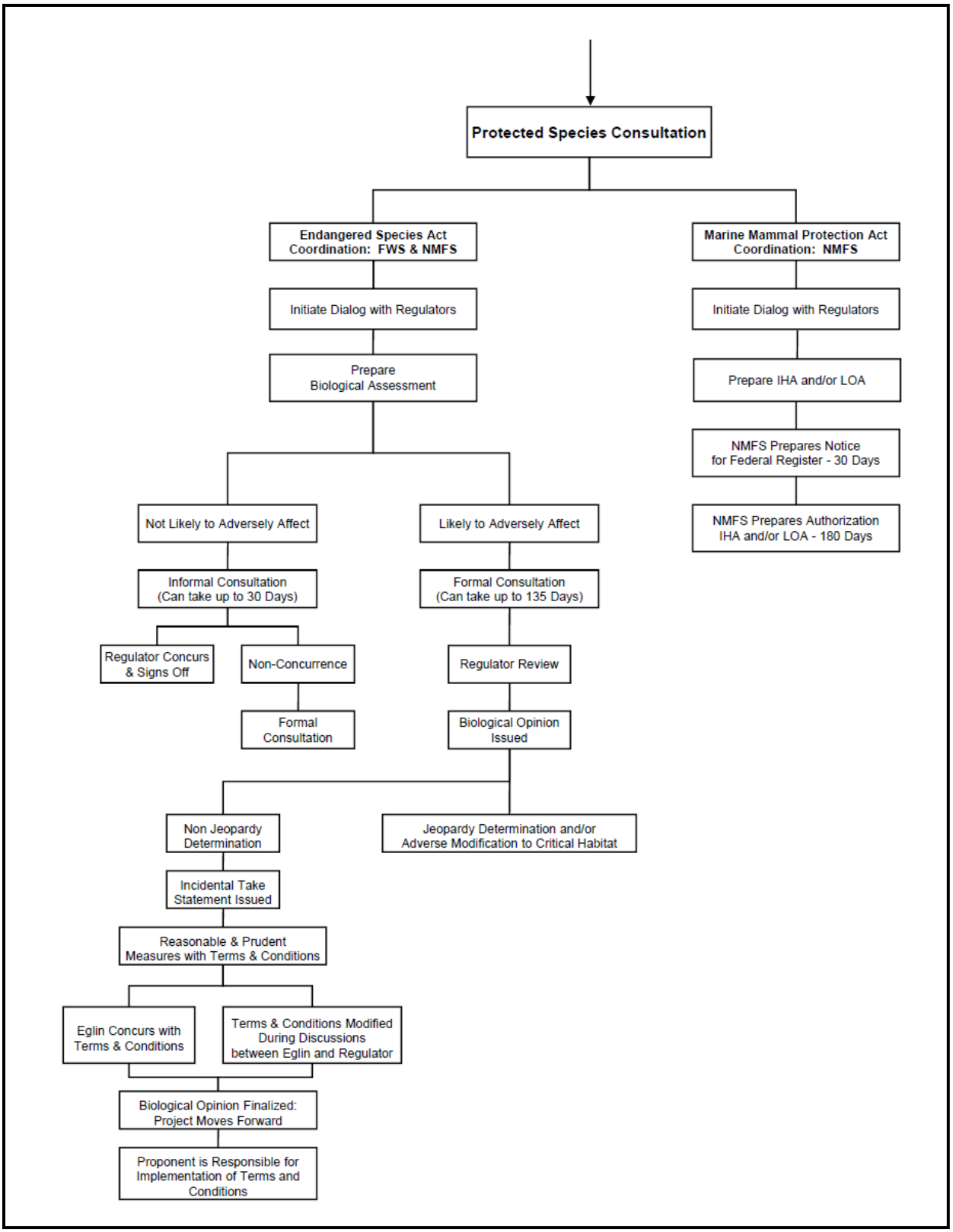

Figure 2-34b. Mission delay avoidance process (continued from previous page).

If it is not possible to avoid impacts to protected species or CH, then NR initiates consultation on behalf of the proponent through the submission of a Biological Assessment (BA) to the USFWS or NMFS (Figure 2-34). For in-water actions that may adversely affect wetlands, seagrasses, bottom sediments, spawning, breeding, or feeding areas, or coral reefs, an EFH assessment is also conducted. For activities that have the potential to impact marine mammals, a request for either an Incidental Harassment Authorization (IHA) or a Letter of Authorization (LOA) is submitted to NMFS. Requirements received back from the USFWS or NMFS in their BO, EFH findings, IHA, or LOA are legally binding and must be followed as part of the action to receive protection under the ESA, MSA, and MMPA. Both Services work with NR to ensure the consultation process is as expeditious as possible to minimize potential mission delays. As of April 2017, Eglin AFB has 60 Section 7 consultations, IHAs, and LOAs that are either currently active, in development, in review, or are being updated (Table 2-14 and Table 2-15).

Table 2-15. Eglin Air Force Base consultations* in development, review, or updating.

Consultation Title	Location(s)**
Mission Activities	
South C Ranges	Mainland
B Ranges	Mainland
Air-to-ground Gunnery (A Ranges)	Mainland
Gulf of Mexico Hypersonic Agile Test Range Biological Assessment *and* Letter of Authorization (LOA)	Gulf of Mexico
Cape San Blas Submarine Fiber Optic Cable	Gulf of Mexico
Eglin Gulf Test and Training Range Programmatic Biological Assessment *and* LOA Application	Gulf of Mexico
Natural Resources Activities	
Integrated Natural Resources Management Plan Update	All
Grassy Cove Living Shoreline	Choctawhatchee Bay
Shoreline Stabilization Near Historic Properties	Santa Rosa Sound

* Consultations are Biological Assessments unless otherwise noted as an Incidental Harassment Authorization or Letter of Authorization.

** Al=SRI, Mainland, Gulf of Mexico, Yellow River, Santa Rosa Sound, Choctawhatchee Bay.

2.4.1.6 Eglin Air Force Base Instruction 13-212 and Range Safety and Operations Procedures Briefings

Eglin NRS played an integral role in developing the Natural Resources section of the EAFBI 13-212 (USAF 2015a) and associated range operations map (USAF 2013e) and will continue to support updates and implementation of the natural resources portion of the instruction and map. This Instruction includes a summary of natural resource requirements that are applicable to missions on Eglin AFB, and all range users are required to follow this instruction.

Eglin NRS also worked with the 96 TW/Range and Airspace Sustainment (96 TW/XPO) range planners to develop the Range Safety and Operations Procedures (RSOP) and associated briefings for all incoming 7 SFG(A) soldiers. The RSOP covers issues such as range safety, scheduling, and the management of range assets, including natural resources. The 96th Operations Support Squadron/Joint Training and Exercise Section (96 OSS/OSPJ) has adapted this briefing for other major range users to ensure operating procedures are standardized and disseminated for improved compliance.

2.4.1.7 Communicating, Implementing, and Monitoring Natural Resource Requirements

Due to the importance of making sure proponents comply with consultation requirements, NR works with the 96 TW/XPO, 96 OSS/OSPJ, and range users to brief test and training participants in-person on natural resource requirements and to distribute environmental guidebooks. Eglin NRS also attends pre-construction briefings to provide requirements to construction crews. Compliance with natural resources requirements helps to ensure that future testing and training missions may proceed without increased requirements or delays. These briefings provide an opportunity to review operations, species locations, and requirements prior to mission initiation and to make adjustments or conduct surveys as necessary.

The ERTT was developed for Eglin AFB to improve communication and tracking of project-specific environmental restrictions resulting from the ESA, MMPA, National Historic Preservation Act, and NEPA. The ERTT provides (1) a central database of environmental restrictions resulting from consultations, permits, and other legal documents; (2) a map viewer that displays current environmental resource locations (pulled from the Enterprise Spatial Database) along with the associated restrictions list in one easy reference window; (3) a library of documents, briefings, and links with additional information on environmental resources; and (4) a tracking system to record surveys, briefings, and another activities conducted to fulfill regulatory requirements. The tool makes it easy for range users to find all environmental requirements in one place and allows multiple users to access information in a central location. Additionally, users can email or print the map/requirements list directly from the website.

The restriction levels for environmentally sensitive areas shown on the ERTT map include those listed below.

- **Prohibited—**No access is permitted.
- **Restricted—**All activities must remain on roadbeds of established roads, including troop movements, vehicle operations, digging, and any type of ground surface disturbance.
- **Limited Use 1—**Star clusters are the ONLY approved pyrotechnics in these areas. Dismounted maneuver is allowed, but vehicles must remain on established roads. No ground disturbance is permitted outside of previously disturbed roadbeds and road shoulders.
- **Limited Use 2—**These areas are approved for pyrotechnics use. Dismounted maneuver is allowed, but vehicles must remain on established roads. No ground disturbance is permitted outside of previously disturbed roadbeds and road shoulders.
- **RCW Buffer—**Restrict activities within 200 feet of RCW active cavity trees to less than two hours.
- **Bald Eagle Buffer—**Restrict activities within a 330-foot buffer of nest tree.

Most natural resource requirements focus on avoidance, and thus are the responsibility of the proponent while they are conducting their mission. After the test event or training cycle is complete, NR works with range users to conduct a survey evaluating compliance and documenting findings in the annual report to the USFWS. NR strives to support proponents when possible; however, if an action is deemed to exceed capacity, then the proponent must ensure consultation requirements are met. Eglin NRS is working with

the 96 TW and range user groups to ensure they are in full compliance, both with EAFBI 13-212 and USFWS/NMFS consultations.

2.4.1.8 Comprehensive Range Plan Issues, Strategies, and Objectives

The 96 TW maintains a CRP for the ETTC (USAF 2014a). The CRP identifies the following issues and strategies that are relevant for the integration of natural resources and the military mission.

Issues

- Ensuring awareness of and compliance with environmental requirements by range users.
- Making certain that range users follow the proper procedures to receive approval through the EIAP.
- Guaranteeing adequate access for land management activities to support range sustainability (e.g., prescribed burning).
- Public safety concerns regarding closed areas now used for missions that were historically open for recreation.

Strategies and Objectives

- Increase awareness of, and compliance with, the provisions of EAFBI 13-212. Ensure new Range users receive the RSOP brief.
- Improve stakeholder awareness of the EIAP and environmental/regulatory restrictions.
- Continue to work with nearby communities, the state, and other federal agencies to prevent incompatible land use and encroachment of the ETTC. Maintain proactive community relationships through ex officio membership on city and county planning boards, and through cooperative planning efforts like the Joint Land Use Study, AICUZ, and Small Area Studies.
- Where mission benefits align with environmental goals, work with partners from local, state, federal, and non-governmental organizations to acquire conservation easements that buffer the Eglin Range.
- Evaluate and address climate change impacts on Eglin AFB's infrastructure and mission capabilities. Support range planning efforts and research projects on the ETTC that involve climate change.
- Meet with tenant leadership to explain their role in the range planning process and the procedure for requesting a range reconfiguration.
- Continue to improve the management of the Range road network, reduce maintenance and sustainment costs, and minimize environmental impacts (stormwater runoff) of the Range roads by implementing the *Range Roads Management Plan* (USAF 2013g).
- Implement the *Access Control Master Plan* (USAF 2013a) by adding/ removing/ repairing specified gates on the Range to improve access control, reduce unauthorized public access, and protect sensitive cultural sites and protected species habitat.

2.4.2 Land Use

The ETTC encompasses 726 square miles of land with a boundary exceeding 257 miles, with over 78 miles of water boundary. It consists of cantonments, test/live-fire areas, and undeveloped landscapes (interstitial area). The cantonments include Eglin Main Base, Camp Rudder, Duke Field, Hurlburt Field, Choctaw Field, C-6 compound, and the 7 SFG(A) compound. Historically, the “Range” was considered to be the remainder of the military reservation and was divided into two basic classes: test areas/sites and the interstitial area; however, the term “interstitial” does not aptly identify this large part of the Range, because Eglin AFB’s interstitial areas are used for tactical training, as a safety buffer for test and training events

that require large danger areas, and outdoor recreation. For many of the missions conducted at specific test areas/sites, the requisite interstitial area is crucial for safely executing the mission. This is not conveyed using only the two classes of land use. Therefore, the CRP Land Use Plan identifies three broad categories (armament hazard, maneuver, and auxiliary) of land use for the Range, as well as sub-categories that fall under these broader categories (Table 2-16). Land-use categories are assigned to the boundaries established in EAFBI 13-212 and on the Eglin Range map.

Table 2-16. Current range land use (from Land Use Plan of the 2014 Eglin Air Force Base Comprehensive Range Plan).

Armament Hazard (AH)	Maneuver	Auxiliary
Impact Area—Dudded	Amphibious	Operational Mission
Impact Area—Nondudded	Aviation Surface Operation	Outgrant
Live-Fire Danger Area	Military Operations in Urban Terrain	Range Support
Research, Development, Test, and Evaluation	Tactical Movement	Recreation

Increases in land clearing, construction, and ground training activities associated with the most recent BRAC round have resulted in changes to natural habitats at multiple locations on the Reservation. BRAC actions and road projects have converted natural habitats to buildings, parking lots, roads, landscaped areas, and firing ranges. There have been multiple issues with stormwater controls along the Mid-Bay Bridge Bypass (Spence Parkway) and the Highway 123 widening project, which cross several creeks that are home to the federally threatened Okaloosa darter. Relocation of gopher tortoises due to these and other construction/road projects stress the tortoises, but long-term the habitats where they are relocated to are much higher quality.

Current mission operations include a combination of test and training operations (Figure 2-35). For the most part, aircraft use has minimal impacts on natural resources at Eglin AFB, with the majority of impacts on the ground or in the water. Noise and human presence associated with missions may disturb wildlife, but most noise sources are temporary and wildlife seem to have acclimated to such noise in areas where they are regularly exposed, such as near test areas. On cleared test areas, ordnance test and training operations cause the majority of impacts, including noise, metals in the soil, debris, and wildfire starts. In the interstitial areas, ground training is the primary effecter, with impacts such as habitat alteration, wildfire starts, and noise from munitions/pyrotechnics use, land navigation, and fighting positions in forested areas, some of which are habitat for federally protected species (e.g., RCW). Impacts of concern for the land-water transition areas include disturbance to federally protected species, nest destruction, and erosion due to vegetation damage. Increased use of interstitial areas for ground training operations has made it more difficult to schedule some natural resource management activities, such as prescribed fire and forest management. The restriction of ground disturbing activities within 100 feet of waterbodies helps to minimize the potential for erosion. More detailed information on the types of activities occurring at specific areas is provided in Figure 2-35, Figure 2-36, and Figure 2-37 and in the NEPA documents listed in Table 2-17.

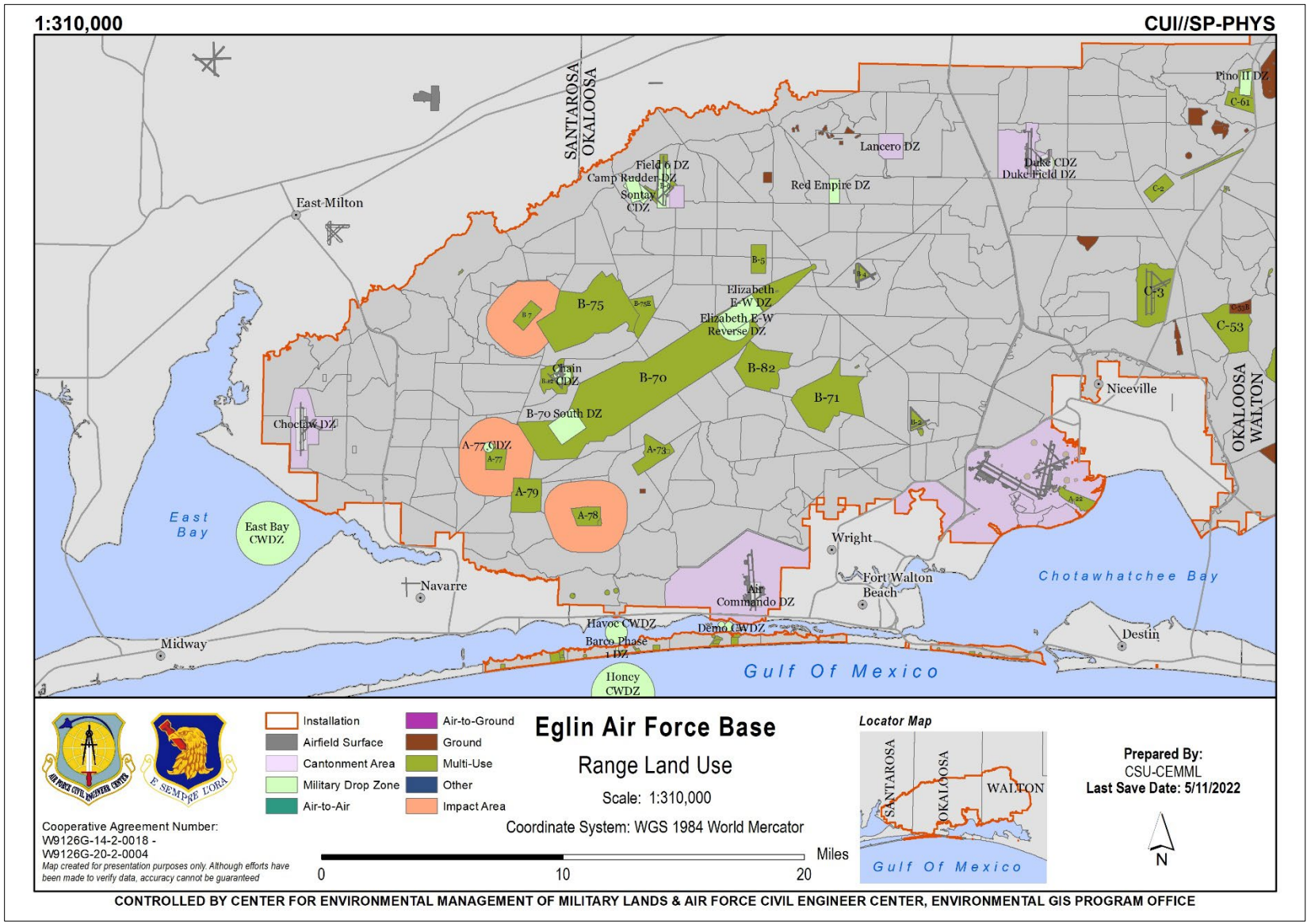

Figure 2-35. Current range land use (West).

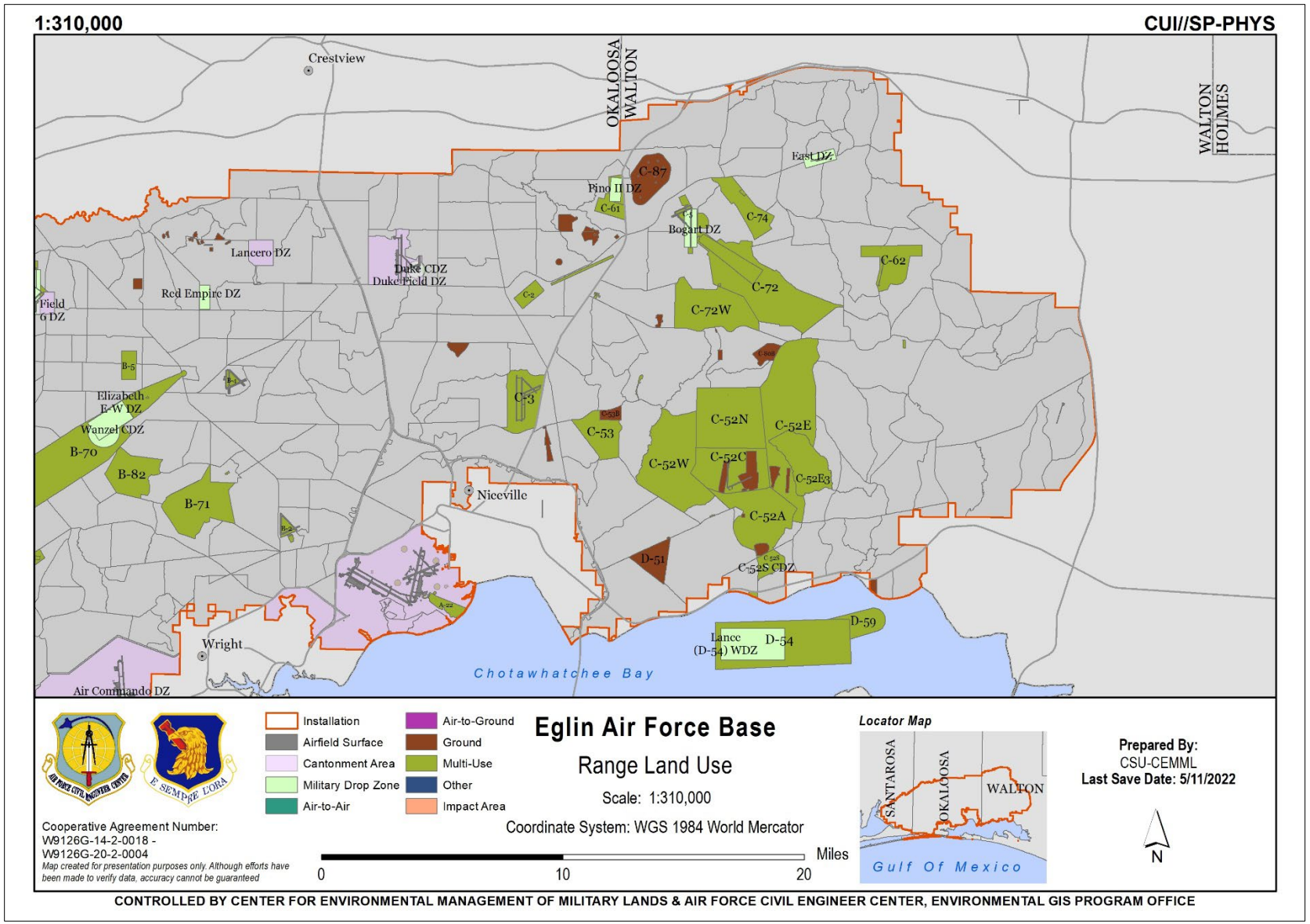

Figure 2-36. Current range land use (East).

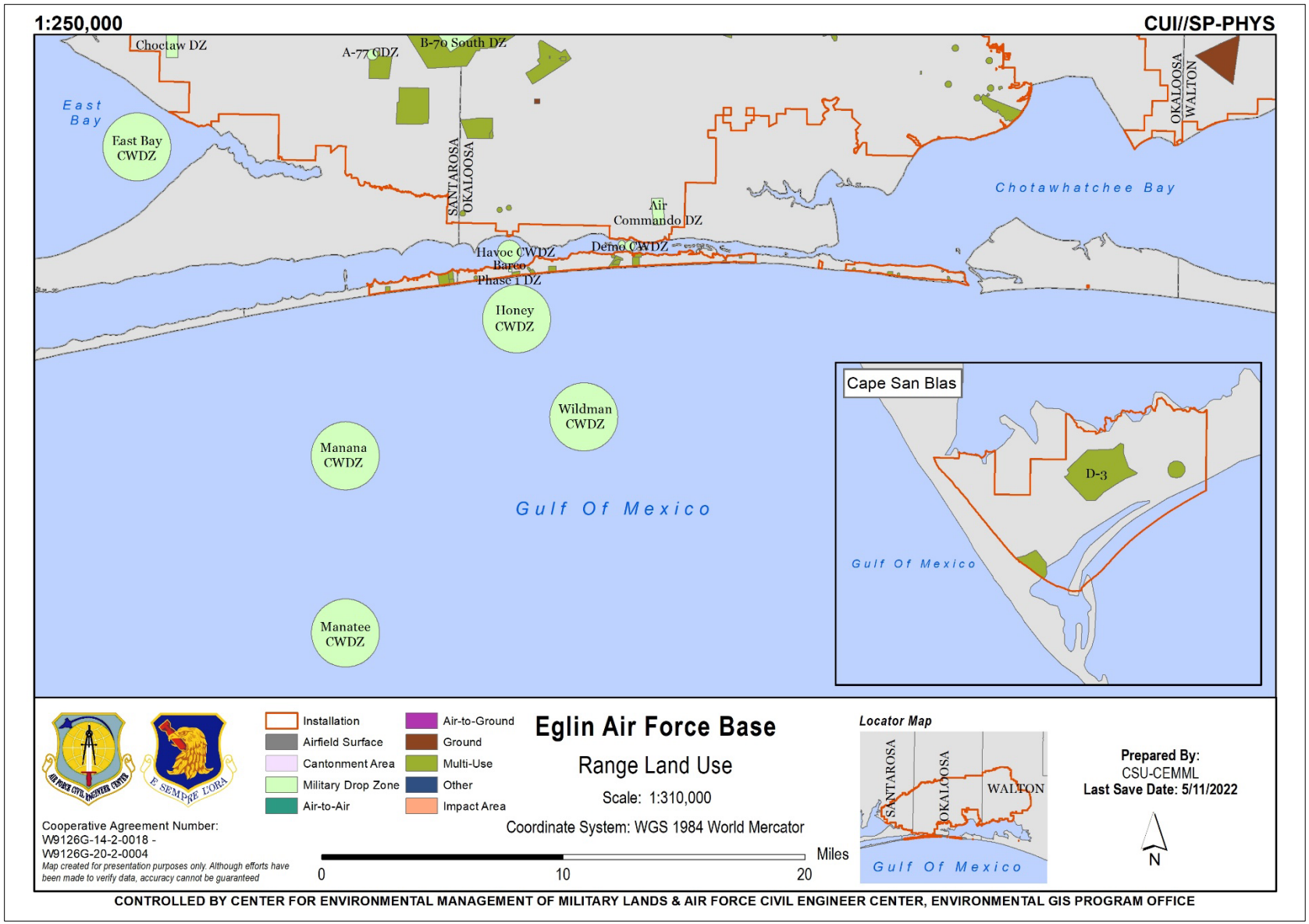

Figure 2-37. Current range land use (South).

Table 2-17. Periodically updated range environmental assessments addressing mission effects.

Title	Study Area	Major Environmental Issues Addressed
Air and Ground Gunnery range environmental assessments (REAs)	Test Areas A-77, A-78, A-79, B-7, and B-75	Noise, habitat alteration, and metals in soil, wildfires
Cape San Blas (CSB) REA (Activities now combined with SRI REA in Fiscal Year (FY) 23)	CSB test sites D-3, D-3a and interstitial and coastal areas out to three nautical miles	Beach driving effects on protected species
Eglin Gulf Test and Training Range (EGTTR) REA	EGTTR beginning at three nautical miles from shore	Noise, debris and direct impacts from gunnery on protected species
Electromagnetic Radiation REA	Eglin Mainland	Electromagnetic impacts from radars and lasers
Estuarine and Riverine Areas REA	Aquatic habitats and transition areas between Eglin Reservation boundary and Yellow River, East Bay, East Bay River, Santa Rosa Sound, and Choctawhatchee Bay	Effects of erosion at boat landings to protected species and their habitats. Effect of metals from expended ordnance on soil and water
Interstitial Areas REA	Land areas of Eglin Reservation excluding cantonment areas, test areas, SRI, and CSB	Habitat alteration, wildfires
Overland Air Operations REA	Eglin Mainland test areas and interstitial areas	Supersonic noise and bird/aircraft collision hazards
Santa Rosa Island (SRI) Mission Utilization Plan REA	Numerous test sites and coastal areas of Eglin-owned SRI out to three nautical miles from shore	Habitat alteration, underwater noise effects on protected species
Test Area B-12/B-70 REA	Test Area B-12/B-70	Ordnance noise, wildfires, and supersonic noise effects on protected species
Test Area B-71/82 REA	Test Area B-71/82	Noise effects on protected species
C Ranges North REA	Test Areas C-5, C-7, C-7A, C-10, C-72, C-72A, C-72W, C-74, C-74A, C-74L, C-80A, C-80B, C-80C, C-80W, C-83, C-124	Accumulation of metals in soil; unexploded ordnance (UXO); noise; habitat alteration; wildfires; slope degradation.
C Ranges South REA	Test Areas A-22, C-2, C-2A, C-3, C-9, C-52 Complex, C-61, C-61A, C-62, C-64, C-64A/B/C, C-86	Accumulation of metals in the soil; UXO; noise; habitat alteration; wildfires; slope degradation.

Sources: USAF 2008a–b, 2010a–d, 2011, 2012b, 2013g, 2014a-d, 2015a-e, USDA 2016a-b, 2017b–c; for those with common access cards, documents can be accessed on the Eglin AFB network at https://cs3.eis.af.mil/sites/OO-EN-MC-27/AFKN_Docs/Forms/AllItems.aspx?RootFolder=%2Fsites%2FOO%2DEN%2DMC%2D27%2FAFKN%5FDocs%2FRange%20EAs%20%2D%20Completed&FolderCTID=0x012000B570BED6DD644A41BC4030DE19B58B62&View={89A5FBF9-34BD-40DE-A078-674B57A81547}.

Range maintenance activities also impact natural resources. Vegetation management on ranges and other mission use areas can result in direct impacts to rare and protected species (e.g., gopher tortoise); however, range maintenance personnel are informed of methods to reduce the possibility of such occurrences. Range road maintenance also impacts natural resources, with the primary concern being excess sedimentation into streams and wetlands, particularly in habitats supporting federally protected species (e.g., Okaloosa darter, RFS). Although measures are being taken to address historic problem areas and to implement good practices during regular road maintenance activities, lack of sufficient manpower and funding continues to limit the long-term effectiveness of erosion control on range roads.

As detailed above, the primary concerns for natural resources at Eglin AFB are associated with direct impacts to protected species and their habitats, with secondary concern for certain rare species as well when not in conflict with the mission. There is the potential for impacts from air and water pollution point sources, noise, hazardous waste, and Environmental Restoration Program (ERP) sites, but Eglin Compliance organizations maintain permits and monitor these, and there are currently no major concerns for natural resource impacts. Eglin AFB manages potential environmental contamination sites through the ERP. The status of these sites is presented in the Eglin AFB Sites Status Report, Environmental Restoration Program, which is periodically updated (USAF 2021b). Eglin AFB addresses potential industrial point source water pollution problems through a Multi-Sector General Permit, which is described in the Eglin AFB Stormwater Pollution Prevention Plan (USAF 2020). The permit covers 22 sampling points, eight of which are sampled as representative of the whole. A stormwater management program for potential non-industrial discharges is addressed through best management practices (BMPs) implemented under the base's Municipal Separate Storm Sewer System (MS4) permit.

2.4.3 Potential Future Mission Impacts on Natural Resources

2.4.3.1 Construction Projects

The Installation Development Plan details proposed future development activities (USAF 2013f). The rate of future land clearing and construction is expected to slow now that the 7 SFG(A) compound and ranges have been completed. Current and proposed construction projects may impact sensitive habitats for protected species, either directly through habitat destruction, or indirectly through changes in management, such as decreased ability to conduct prescribed burns near new buildings. Future construction may also impact species indirectly by prohibiting growth of the species or connection of suitable habitat to merge populations. For example, the east and west subpopulations of the RCW may be impacted if there is future growth in the 7 SFG(A) complex and/or Duke Field areas. Continued relocation of gopher tortoises due to constructions may result short-term negative impacts due to stress, but long-term benefit from moving tortoises to better habitats.

2.4.3.2 Road Projects

Current and proposed road construction and road widening projects cross sensitive habitats for federally listed species. The following road initiatives are not mission-related and not generated by Eglin AFB; however, Eglin AFB is a stakeholder. The State Road 123 widening project crossed streams that are home to the Okaloosa darter, which NRS continues to monitor. Notional future projects discussed by the surrounding community include a bypass for Crestview over the Shoal River, which is a migratory pathway for the federally protected Gulf sturgeon and multiple protected mussel species (Choctaw bean [*Villosa choctawensis*], narrow pigtoe [*Fusconaia escambia*], fuzzy pigtoe [*Pleurobema strodeanum*], and southern sandshell [*Hamiota australis*]); widening State Road 85 between Crestview and State Road 123, again crossing the Shoal River; and the Northwest Florida Bypass along Highway 98 (RFS habitat). Due to poor

management of erosion control measures, some of these road projects have contributed excess sediment to streams and wetlands, and there is the potential for additional erosion issues. There is the potential for impacts to Gulf sturgeon migration due to noise and other disturbances in the water if ESA Section 7 consultation requirements are not followed.

2.4.3.3 Range Maintenance

Future range maintenance activities may also impact natural resources. Future mechanical removal and herbicide control methods for vegetation management on ranges could result in direct impacts to protected species (e.g., gopher tortoise). Range road maintenance (and lack of maintenance) is expected to continue to contribute excess sedimentation into streams and wetlands, which is of particular concern in habitats supporting federally protected species (e.g., Okaloosa darter, RFS). Although measures are being taken to address historic problem areas and to implement good practices during regular road maintenance activities, lack of sufficient manpower and funding will continue to limit the long-term effectiveness of erosion control on range roads.

2.4.3.4 Mission Testing and Training

The *Eglin Comprehensive Range Plan* details expected increases in mission tempo (USAF 2014a). No major changes are foreseen for the areas used or the types of testing activities occurring at Eglin AFB, with testing of various munitions systems continuing at established test areas and in the Gulf. Live weapon detonations in the EGTTR have increased, primarily associated with development of weapons for targeting and destroying small boats. Activities at SRI and the land-water interface continue at a high frequency. Habitat alteration is the primary natural resources concern associated with increased training due to impacts to protected species and their habitats. Determining the best way to balance training and management requirements is a challenge that must be addressed to maintain the sustainability of the environment necessary to support both the mission and natural resources.

Increased use of the Range for ground training operations and large weapon footprints at times can limit access for natural resource management, decreasing the ability to effectively conduct prescribed fires, forest restoration activities, and monitor rare and protected species, and increase fragmentation of the landscape. Eglin AFB must be vigilant in monitoring impacts in areas of repeated, heavy ground training to identify erosion problems in areas where vegetation is trampled, particularly along water bodies and on steep slopes. Increased human presence and noise may harass certain species, such as sea turtles and RCWs, leading to issues with nesting and foraging; however, if mission participants abide by NR requirements, such impacts should not occur. Increased conflicts between military missions and outdoor recreation activities, compliance issues for ESA Section 7 consultations, and lack of monitoring and enforcement for natural resource requirements are some of the potential future impacts Eglin NRS managers must consider.

Eglin NRS works with ground training groups to address issues of mutual concern, such as protection of training assets from fire; documentation of permanent training objectives with holes, wire, or other safety hazards for fire personnel; management options to create desired training conditions; and discussion of regulatory requirements to ensure compliance. The goal is to establish processes for information exchange and coordination to minimize conflicts and maximize the effectiveness of both mission and natural resource management activities.

Due to the increasing volume and complexity of tenant ground training missions, greater compliance oversight by NR is necessary to avoid violation of requirements from Section 7 consultations. Because education and accountability are key components to ensuring compliance, Eglin AFB developed an ERTT and Map, which detail requirements both spatially and in text, and serve as a repository for information on

actions taken to implement and monitor environmental requirements. Eglin NRS worked closely with personnel from 96 TW/XPO, 96 OSS/OSPJ, 96th Range Support Squadron/Range Systems Flight tenant groups, and other 96 CEG/CEIE organizations to design this system to ensure it met the needs of all organizations and sufficiently addresses all regulatory concerns.

2.4.3.5 Potential Future Impacts due to Climate Change

Eglin AFB's mission as a weapons testing and ground forces training area requires a diverse assemblage of vegetation communities to provide varied and realistic training opportunities. A major threat to the military mission at Eglin AFB due to climate change is the potential for shifts in vegetation communities resulting from an increase in average temperature, extreme hot days, and wildfire frequency and/or intensity. Another threat to the mission is from sea level rise and storm surges, reducing the land available for ground-based training and impacting amphibious maneuver training along the south end of the installation and along its barrier islands.

Climate change is also projected to have substantial impacts on the built infrastructure of this installation. Sea level rise modeling suggests most buildings located on Eglin AFB's barrier islands will either be inundated during high water events or become inaccessible due to flooded roads. Much of the coastal area along the eastern end of Eglin Main Base could also be inundated. This will affect the principal facilities at the head of Weekley Bayou for transferring fuel from the barges to the lines that carry fuel to the airfield, the use of EOD training facilities and the Eglin Outdoor Recreation area at Weekley Bayou, possibly impacting a major component of the training mission of the installation as well as the morale and physical welfare of personnel stationed at Eglin AFB.

Wildland fires at Eglin AFB are also expected to increase in number and severity, with primary effects on the military mission including equipment damage and restricted personnel access as well as greater smoke effects impacting smoke sensitive missions, which are numerous across Eglin AFB each year. Secondary effects may include habitat shifts that lead to an increasingly regulated environment or a loss of authenticity in training areas.

Other impacts to the mission at Eglin AFB linked to climate change could include

- increases in temperature and wind velocity leading to unsafe environmental conditions for the launch of current and planned weapons and equipment, resulting in increased maintenance requirements, requirements for new equipment, or decreased launch capacity (DoD 2021);
- increased dust generation effecting equipment and visibility (DoD 2021);
- increased wind velocities damaging vital mission infrastructure (Sydeman et al. 2014);
- increased drought potential (Glick et al. 2011);
- potential loss of future training areas that may be needed in light of a changing geopolitical landscape and base realignment; and
- increased regulatory burden if species decline either on the base or elsewhere and are listed by federal or state agencies.

In addition to these effects, climate change has the potential to disrupt the acquisition and transportation of materials required for the maintenance, construction, and storage of the equipment required for these systems (DoD 2021).

3.0 ENVIRONMENTAL MANAGEMENT SYSTEM

The USAF environmental program adheres to the Environmental Management System (EMS) framework and its Plan, Do, Check, Act cycle for ensuring mission success. EO 13834, Efficient Federal Operations; DoDI 4715.17, Environmental Management Systems; AFI 32-7001, Environmental Management; and International Organization for Standardization 14001 standard, Environmental Management Systems – Requirements with guidance for use, provide guidance on how environmental programs should be established, implemented, and maintained to operate under the EMS framework.

The natural resources program employs EMS-based processes to achieve compliance with all legal obligations and current policy drivers, effectively manage associated risks, and instill a culture of continual improvement. The INRMP serves as an administrative operational control that defines compliance-related activities and processes

4.0 GENERAL ROLES AND RESPONSIBILITIES

General roles and responsibilities that are necessary to implement and support the natural resources program are listed in Table 4-1. Specific natural resources management-related roles and responsibilities are described in appropriate sections of this plan.

Table 4-1. General roles and responsibilities related to the Natural Resources Program at Eglin Air Force Base.

Office/Organization/ Job Title (Listing is not in order of hierarchical responsibility)	Installation Role/Responsibility Description
Installation Commander	Approves or delegates approval of the INRMP; endorses or delegates endorsement of the annual review of the INRMP as valid and current; and enters into cooperative agreements for Sikes Act related activities as needed. Oversees access to and use of installation natural resources.
AFCEC Natural Resources Media Manager/Subject Matter Expert/Subject Matter Specialist	Provides technical assistance and guidance to USAF on natural resources issues; Advocate for resources required to implement approved installation Integrated Natural Resources Management Plans
Installation Natural Resource Manager/Point of Contact	Coordinates the planning, approval, implementation, and monitoring of Eglin AFB INRMP activities
Installation Security Forces	Provides security for range and cantonment areas.
Installation Unit Environmental Coordinators (UECs); see AFI 32-7001 for role description	Liaison between Environmental Management and their unit Attend UEC meetings. Inform the work areas supervisor of the Environmental Management System (EMS) and environmental policies. Mange EMS requirements for the unit. Provide information for installation environmental and sustainability performance measures. Support EMS and compliance assessments, and assist with development of corrective actions for findings.
Installation Wildland Fire Program Manager	In 2012, the responsibilities of the existing Eglin AFB fire program were expanded Air Force-wide in support of the new Air Force Wildland Fire Branch (AFWFB). This Branch serves a mission of environmental sustainment alongside military mission support and demonstrates how both can thrive through careful fire management. This new program includes responsibilities for other Air Force lands nationwide setting wildland fire policy and standards, tracking Air Force firefighter qualifications, and assisting other Air Force bases with program planning and implementation. To fill the gap left from the reorganization of the Wildland Fire Element at Jackson Guard into AFCEC, the Branch provides staffing for the Eglin Wildland Support Module (WSM). At Full Operating Capacity, the Module will consist of 19 full-time employees comprised of USAF, United States Fish and Wildlife Service (USFWS), and Colorado State University (CSU)

Table 4-1. General roles and responsibilities related to the Natural Resources Program at Eglin Air Force Base.

Office/Organization/ Job Title (Listing is not in order of hierarchical responsibility)	Installation Role/Responsibility Description
	staffing. The intent of this module is to remain integrated with Eglin Natural Resources staff while simultaneously providing wildland fire support and services to Hurlburt Field and Tyndall AFB. In addition, The AFWFB and Eglin WSM provide both National Wildfire Coordinating Group and experiential trainings onsite. Department of Defense employees, along with the United States Forest Service (USFS), USFWS, and other agency firefighters have received both field and class-room instruction though these trainings.
Pest Manager	Provides pest management services on Eglin AFB, Duke Field, 7 SFG(A), 6RTB, and the 20th Space Command grounds and facilities.
Range Operating Authority	AIR FORCE MANUAL 13-212, VOLUME 1 section 2.9; Eglin AFB Instruction 13-212 Section 5.5.1; EGLIN AIR FORCE BASE INSTRUCTION 90-102 Section 4; all discuss Range Operating Authority (ROA). Section 2.8 of AFI 13-212 defines the roles and responsibilities of the ROA. Fundamentally, "the wing commander is responsible for operating the range." This includes assigning personnel to serve as the Ranger Operations Officer (ROO), Range Safety Officer (RSO), and other range-related roles. The ROA is also responsible for the maintenance of the Comprehensive Range Plan (CRP), overseeing range scheduling and usage, and coordinating with the other range tenants and stakeholders. With regards to the INRMP, section 2.8.33 tasks the ROA with leading "efforts to sustain, restore, and modernize the natural and man-made infrastructure…This includes identifying the range natural infrastructure requirements and regularly evaluating the health of the natural infrastructure."
Conservation Law Enforcement Officer (CLEO)	Provides enforcement of hunting, fishing, protected species, and other natural resources laws and regulations
National Environmental Policy Act (NEPA)/Environmental Impact Analysis Process (EIAP) Manager	Coordinates NEPA analysis for all NR activities and plans, and coordinates with NR for projects with NR impacts. It proactively manages and conducts the EIAP at Eglin AFB and works to integrate EIAP into decision-making at all levels.
National Oceanic and Atmospheric Administration (NOAA)/National Marine Fisheries Service (NMFS)	NMFS is the regulatory agency that enforces such laws as the MMPA, the ESA, and the MSA for marine species and their habitat. Eglin NRS works with NMFS to minimize potential takes or harassment of marine species and adverse effects to Essential Fish Habitat protected under these laws.
U.S. Forest Service	Supports the AFWFB.

Table 4-1. General roles and responsibilities related to the Natural Resources Program at Eglin Air Force Base.

Office/Organization/ Job Title (Listing is not in order of hierarchical responsibility)	Installation Role/Responsibility Description
U.S. Fish and Wildlife Service	The main role of the USFWS Ecological Services Office in Panama City, Florida, has been to assist Eglin NRS in the conservation and management of the federally listed threatened and endangered species that occur on the installation in a manner which sustains and supports Eglin AFB's diverse test and training military mission, including monitoring and restoration activities. Additionally, Eglin AFB and the USFWS have developed an efficient coordination process for keeping the USFWS apprised of upcoming Eglin AFB projects in need of consultation, thus allowing expeditious processing of these consultations to support the rapidly changing military mission. USFWS Fisheries Resources Program (USFWS-FR) personnel support aquatic resource management on Eglin AFB through the NR Wildlife Office, to better address aquatic resources and the federally threatened Okaloosa darter, federally threatened Gulf sturgeon, and four listed freshwater mussel species. Oversight and supervision of USFWS-FR employees is provided by the Project Leader at USFWS in Panama City, Florida. A Scope of Work is developed annually and approved through the USFWS, Eglin NRS, and AFCEC Installation Support Team (IST) to identify the annual work plan and outline critical data needs and action items.
Florida Fish and Wildlife Conservation Commission (FWC)	The FWC assists NR with review and development of management plans and provides technical information and support of Eglin AFB's fish and wildlife management program. Eglin AFB is designated as a Florida Wildlife Management Area and, as such, enables Eglin-specific rules and regulations to be codified into Chapter 68A-15.063, F.A.C. as needed. Under this program, NR serves as the lead management agency and collects fees from the sale of hunting and fishing permits to manage fish and wildlife resources under state jurisdiction. In exchange, Eglin AFB permits public hunting and fishing opportunities and FWC sworn officers provide fish and wildlife law enforcement support. Rule proposals are advertised for public review and considered by FWC's seven appointed Commissioners who are empowered to codify them as State law. Rule change proposals that originate from landowners are viewed favorably; however, FWC staff may only recommend them and encourage adoption by the Commissioners (FWC 2012). Operating under this system, NR proposes Eglin-specific rules and regulations that, if adopted, are codified into F.A.C. to become state law, and are enforceable by FWC Law Enforcement Officers. This process enables FWC Law Enforcement Officers to enforce Eglin-

Table 4-1. General roles and responsibilities related to the Natural Resources Program at Eglin Air Force Base.

Office/Organization/ Job Title (Listing is not in order of hierarchical responsibility)	Installation Role/Responsibility Description
	specific rules, such as no hunting in closed areas and unique management unit (MU) regulations.
96th Civil Engineer Group, Environmental Management Branch (96 CEG/CEIE)	The Environmental Management Branch Chief provides the lead and overall coordination of environmental assets and compliance through a staff that provides procedural and technical advice. Natural resources constraint data and other forms of information are provided to wing commanders and their staffs to support informed decision-making. Examples include military and non-military NEPA documents, facility planning, construction plans, maintenance, and daily facilities activities. The Air Force website for the 96th Civil Engineer Group, Environmental Management Branch provides organization charts, vision and strategies, as well as links to Environmental Assets, Compliance, and Restoration. The Environmental Management Branch supports the warfighter by cleaning up environmental damage from past activities, meeting present compliance responsibilities, planning future activities to minimize environmental impacts, managing natural and cultural resources responsibly, and eliminating pollution in Eglin AFB activities wherever possible. Organizations within 96 CEG/CEIE include those listed below. • 96 CEG/CEIEC, Environmental Compliance • 96th Civil Engineer Group, Environmental Management Branch, Environmental Assets (96 CEG/CEIEA, Environmental Assets)
96 CEG/CEIEA	Sustaining management and protection of Eglin AFB's cultural resources, including proactive environmental planning and analysis of proposed actions on Eglin AFB to ensure the military mission can be accomplished without significant adverse impact to them.
96 CEG/CEIEA, Natural Resources Office	NR is the primary organization responsible for implementation of the INRMP. Eglin NRS supports the Air Force and Department of Defense through responsible stewardship of the installation's natural resources, and by serving as the liaison between range users and regulators responsible for protected species. This is accomplished by integrating natural resources management and using an ecosystem management approach, which maintains ecosystem viability and conserves biodiversity while providing compatible multiple use. Eglin NRS also coordinates with range users through the EIAP to ensure compatibility of activities.

Table 4-1. General roles and responsibilities related to the Natural Resources Program at Eglin Air Force Base.

Office/Organization/ Job Title (Listing is not in order of hierarchical responsibility)	Installation Role/Responsibility Description
96 CEG/CEIEA, Environmental Planning Office	96 CEG/CEIEA, Cultural Resources Office conducts NEPA analysis for all NR activities and plans, and coordinates with NR for projects with NR impacts. It proactively manages and conducts the EIAP at Eglin AFB and works to integrate EIAP into decision-making at all levels.
96 CEG/CEIEA, Cultural Resources Office	The following Eglin AFB organizations assist NR with the planning, enforcement, and implementation of the INRMP. 96 CEG/CEIEA coordinates all natural resources activities to avoid negative impacts to significant cultural and historical resources and consults with the State Historic Preservation Office.
96 CEG/CEIEC, Environmental Engineering	96 CEG/CEIEC, Environmental Engineering provides policy, guidance, and permits for media-specific environmental programs (air, dredge/fill, potable/non potable water, stormwater, wastewater, storage tanks, and spill response). It also assists in wetland delineation and permitting fill in wetlands.
6 CEG/CEIEC, Pollution Prevention	96 CEG/CEIEC, Pollution Prevention encourages base organizations to use pollution prevention (material substitution, process change, reuse and recycling) as a primary strategy for meeting environmental compliance requirements. 96 CEG/CEIEC conducts annual EMS audits and environmental compliance assessments.
96th Test Wing/Public Affairs	The 96th Test Wing/Public Affairs supports NR through media relations, community relations, and internal information and public education concerning Eglin AFB's natural resources, how they are managed, used and protected.
96th Civil Engineer Group, Contract and Finance Management (96 CEG/CEIAR)	The 96 CEG/CEIAR provides administrative assistance in financial management and contract management in support of NR.
96th Civil Engineer Group, Computer Support (96 CEG/CEIAI)	The 96 CEG/CEIAI provides computer and technical support to NR.
96th Test Wing, Protocol Office	The 96th Test Wing, Protocol Office provides tours for distinguished visitors.
Air Force Test Center, History Office (96 TW/HO)	The 96 TW/HO maintains records of history of natural resources management on Eglin AFB.
Air Force Test Center, Safety Office (96 TW/SE)	The 96 TW/SE provides oversight of the grounds, weapons and range safety as well as the Bird/Wildlife Aircraft Strike Hazard (BASH).
Air Force Test Center, Judge Advocate, Environmental Law Division (96 TW/JAV)	The 96 TW/JAV provides legal advice and representation.

Table 4-1. General roles and responsibilities related to the Natural Resources Program at Eglin Air Force Base.

Office/Organization/ Job Title (Listing is not in order of hierarchical responsibility)	Installation Role/Responsibility Description
Air Force Test Center, Contracting Directorate (96 TW/PK)	The 96 TW/PK provides contract/ Memorandum of Agreement (MOA) support.
Air Force Test Center, Comptroller Directorate (96 TW/FM)	96 TW/FM provides financial management.
96th Test Wing Range and Airspace Sustainment—96 TW/XPO	96 TW/XPO office assists the ROA in sustaining and planning for the Eglin Test and Training Complex (ETTC). Responsibilities include producing, maintaining, and updating the CRP and its component plans; conducting mission impact assessments of proposed changes to the configuration of the ETTC; long-range planning to improve the capabilities of the ETTC; and assisting the wing commander as needed in meeting his responsibilities as ROA.
96th Test Wing, Operations Group	The 96th Test Wing, Operations Group provides test and training requirements, test planning and execution, special operations, helicopter support, integrating natural resources considerations into mission planning, and weather support.
96th Test Wing Operations Support Squadron (OSS)	96 TW OSS provides the coordination between Eglin AFB and training groups.
96th Range Group (96 RN)	The 96 RN operates and maintains the Eglin Test and Training Complex by providing airborne and range instrumentation, infrastructure, facilities, and technical expertise to support fielding of war winning capabilities.
96th Medical Group	The 96th Medical Group provides firefighter and occupational physicals.
96th Civil Engineer Group (96 CEG)	The 96 CEG provides environmental management to Eglin AFB as identified above.
96th Logistics Readiness Squadron	The 96th Logistics Readiness Squadron provides supply and equipment orders.
96th Security Forces Squadron	The 96th Security Forces Squadron provides laws and regulations enforcement.
Air Force Civil Engineer Center (AFCEC)	AFCEC, through the Installation Support Sections (ISSs), has many INRMP-related responsibilities. Their primary INRMP-related task is to provide execution guidance and to oversee implementation of natural resources management programs on installations within the command. AFCEC provides primary support for installation sustainment, including engineering and environmental programs. AFCEC maintains centralized control of environmental budgeting, staffing, and plan development, and assists bases with expertise and guidance. The development of local policy, oversight, and program execution remain

Table 4-1. General roles and responsibilities related to the Natural Resources Program at Eglin Air Force Base.

Office/Organization/ Job Title (Listing is not in order of hierarchical responsibility)	Installation Role/Responsibility Description
	base-level responsibilities. The Eglin IST is Eglin NRS's primary contact for most of the actions listed below. Specific support actions for Natural Resources are as follows. • Aid installations in preparation and review of INRMPs, including review for compliance with pertinent directives. Provides INRMP execution guidance and oversee implementation of natural resources management programs. • Ensure that installations conduct required inventories of natural resources, and validate installation natural resources budgets, staffing, and training requirements. • Provide technical assistance to MAJCOMs and installations on natural resources programs and training. • Provide and manage contracts, interagency agreements, and cooperative agreements to assist MAJCOMs and installations with implementation of natural resources management projects. • Manage the forestry; agricultural and grazing; and hunting, fishing and outdoor recreation program reimbursable budgets. • Provide technical guidance and expertise on pest management, grounds maintenance, and water conservation. The AFWFB staffs the Eglin WSM stationed at Eglin AFB Jackson Guard, and provides wildland fire policy and standards, tracking of Air Force firefighter qualifications, and assists with program planning and implementation. Restoration (AFCEC/CZOR) supports natural resources by providing information on areas to avoid, such as those with Environmental Restoration Program sites and land use control constraints.
Other Groups	Various universities and research organizations conduct research projects on Eglin AFB that provide information that support INRMP implementation. Some of the groups currently working with Eglin AFB include The Nature Conservancy, Gulf Coastal Plain Ecosystem Partnership, Florida Natural Areas Inventory, USFS, Choctawhatchee Basin Alliance, Longleaf Alliance, University of Florida, Virginia Tech, Jones Ecological Research Center, and Auburn University, to name a few. Additionally, contractors from Jacobs, Inc. Colorado State University (CSU) and Texas A&M University provide direct support to NR.

5.0 TRAINING

AF installation NRMs/POCs and other natural resources support personnel require specific education, training and work experience to adequately perform their jobs. Section 107 of the Sikes Act requires that professionally trained personnel perform the tasks necessary to update and carry out certain actions required within this INRMP. Specific training and certification may be necessary to maintain a level of competence in relevant areas as installation needs change, or to fulfill a permitting requirement.

Installation Supplement – Training

Natural resources management training is provided to ensure that base personnel, contractors, and visitors are aware of their role in the program and the importance of their participation to its success. Training records are maintained IAW the Recordkeeping and Reporting section of this plan. Below are key NR management-related training requirements and programs.

- NRMs at Category I installations must take the course, DoD Natural Resources Compliance, endorsed by the DoD Interservice Environmental Education Review Board and offered for all DoD Components by the Naval School, Civil Engineer Corps Officers School. See http://www.netc.navy.mil/centers/csfe/cecos/ for Civil Engineer Corps Officers School course schedules and registration information. Other applicable environmental management courses are offered by the Air Force Institute of Technology (http://www.afit.edu), the National Conservation Training Center managed by the USFWS (https://training.fws.gov), and the Bureau of Land Management Training Center (https://www.blm.gov/learn/national-training-center).
- Natural resource management personnel shall be encouraged to attain professional registration, certification, or licensing for their related fields, and may be allowed to attend appropriate national, regional, and state conferences and training courses.
- All individuals who will be enforcing fish, wildlife and natural resources laws on USAF lands must receive specialized, professional training on the enforcement of fish, wildlife and natural resources in compliance with the Sikes Act. This training may be obtained by successfully completing the Land Management Police Training course at the Federal Law Enforcement Training Center (http://www.fletc.gov/).
- Individuals participating in the capture and handling of sick, injured, or nuisance wildlife should receive appropriate training, to include training that is mandatory to attain any required permits.
- Personnel supporting the BASH program should receive flight line drivers training, training in identification of bird species occurring on airfields, and specialized training in the use of firearms and pyrotechnics as appropriate for their expected level of involvement.
- The DoD supported publication Conserving Biodiversity on Military Lands—A Handbook for Natural Resources Managers (http://dodbiodiversity.org) provides guidance, case studies and other information regarding the management of natural resources on DoD installations.

Personnel participating in prescribed fire and wildfire activities must attend a minimum of S130/S190 training. Additional levels of training may be required, as detailed in Tab 1—Wildland Fire Management Plan.

6.0 RECORDKEEPING AND REPORTING

6.1 Recordkeeping

The installation maintains required records IAW Air Force Manual 33-363, Management of Records, and disposes of records IAW the Air Force Records Management System records disposition schedule. Numerous types of records must be maintained to support implementation of the natural resources program. Specific records are identified in applicable sections of this plan, in the Natural Resources Playbook and in referenced documents.

Installation Supplement—Recordkeeping

Eglin NRS maintains copies on the Eglin AFB server of all NR plans, surveys, consultations, Geographic Information System (GIS) data, studies, permits, and other pertinent NR materials. Certain materials are also stored on eDASH. Some historical materials are maintained as hard copies and stored in the NR library or Building 1508.

6.2 Reporting

The installation NRM is responsible for responding to natural resources-related data calls and reporting requirements. The NRM and supporting AFCEC Media Manager and Subject Matter Specialists should refer to the Environmental Reporting Playbook for guidance on execution of data gathering, quality control/quality assurance, and report development.

Installation Supplement—Reporting

Eglin NRS submits annual reports to the USFWS and NMFS regarding activities taken during the year to address requirements from ESA Section 7 consultations, MMPA consultations, and EFH consultations.

7.0 NATURAL RESOURCES PROGRAM MANAGEMENT

This section describes the current status of the installation's natural resources management program and program areas of interest. Current management practices, including common day-to-day management practices and ongoing special initiatives, are described for each applicable program area used to manage existing resources. Program elements in this outline that do not exist on the installation are identified as not applicable and include a justification, as necessary.

Installation Supplement—Natural Resources Program Management

Natural resources management is an inherently integrated process. While this section discusses each program separately, it must be noted that each of the strategic priorities of the Eglin NRS involves multiple program elements. Projects involving multiple programs will be described under the program with primary responsibility for the project and referenced in subsequent sections. All INRMP projects support achievement of the five overarching principal natural resources management goals, as listed below.

- Provide direct support and natural resources coordination services by planning for and adapting to a rapidly changing military mission.
- Enable long-term sustainability of barrier island environments for military testing/training by protecting, sustaining, and monitoring rare and protected species.
- Sustain habitat integrity, functionality, and productivity by managing invasive plants and animals, continuing a robust and nation-leading fire program, and maintaining a highly productive and effective forestry program
- Restore, protect, and monitor wetlands, aquatic habitats, and watersheds to comply with federal law and maximize mission access and flexibility.
- Provide a variety of use, values, products, and services to present and future generations while maintaining sustainable ecosystems.

Coordination within Natural Resources (Forest Management, Wildlife, and Eglin Wildland Support Module)

Due to the complexity of NR management activities, coordination among Forest Management, Wildlife, and the Eglin Wildland Support Module is vital to ensuring the best use of resources in the most appropriate locations at the right times. Eglin NRS is in the process of formalizing a coordination process for all management activities that involve multiple sections. As part of this planning, schedules and POCs for each activity will be determined. Natural Resources maintains a shared folder on the network that includes information and maps related to activities such as scheduled timber sales, prioritized areas for burning, planned timber stand improvement (TSI) herbicide areas, planned TSI mechanical removal sites, dove fields/food plots, erosion control sites, RCW hubs, ecological monitoring plots, and other activities of mutual interest.

Establishment of planning teams for each significant management activity of mutual concern will ensure that all interested parties are involved in prioritizing how resources are allocated. Planning teams will determine the best time(s) of year for coordination and will pull appropriate personnel from their elements for involvement as needed. Checks and balances will be built into the system so that all facets of an issue are given consideration prior to action to avoid conflicts. One example is TSI planning; Forest Management will coordinate with Wildlife and Eglin WSM by soliciting input on areas in need of TSI, then circulate a map of proposed areas for review. Formal coordination is being developed to improve planning between elements and documentation will be archived.

Multiple tools are either currently available or are under development which intend to aid in decision-making and coordination. Eglin NRS is already using the Ecological Conditions Model (ECM), Fire Prioritization Model, a forest management database, and the RCW Foraging Habitat Assessment Tool to better inform management decisions. Also, the Fire Data Support System (Fire DSS) is now operational and the T&E DSS is under development. This coordinated effort is vital to achieving successful implementation of the INRMP and enabling the military mission at Eglin AFB

Component Plans as E-Appendices to the INRMP

Due to the size and complexity of Eglin AFB and its INRMP, CPs were produced for each major program within Eglin NRS to support the main INRMP. Similar to work plans, CPs describe the day-to-day operations and projects of each program in greater detail than in the main body of the INRMP. These CPs are part of the overall INRMP and should be used by reviewers and partners to find additional information on each program. The CPs are listed below and are included as Tabs or electronic Appendices to this INRMP.

Tabs

1) Bird/Wildlife Aircraft Strike Hazard (BASH) Plan
2) Golf Environmental Management (GEM) Plan
3) Integrated Cultural Resources Management Plan (ICRMP)
4) Wildland Fire Management Plan

Appendices

A) Annotated Summary of Key Legislation Related to the Design and Implementation of the INRMP
B) Environmental Guidebooks
C) Forest Management CP
D) Outdoor Recreation CP
E) Threatened and Endangered Species CP
F) Ecological Monitoring CP
G) Erosion Control CP
H) Management of Invasive Non-Native Plants, Wildlife, Feral Animals, and Nuisance Native Wildlife CP
I) Wildland Fire Management Plan

7.1 Fish and Wildlife Management

Applicability Statement

This section applies to all USAF installations that maintain an INRMP. The installation is required to implement this element.

Program Overview/Current Management Practices

Consistent with the NR effort to ensure “no net loss” of operational capability for Eglin AFB test and training missions, the Fish and Wildlife Management program integrates and prioritizes all management activities to protect, effectively manage and sustain fish and wildlife resources. Federal, state, and USAF regulations (Appendix A) provide clear guidance and direction for achieving this goal. Management activities developed and implemented to ensure compliance with this guidance, thereby promoting mission sustainability, are described in this Section and in each of the following Fish and Wildlife related CPs.

- Outdoor Recreation Component Plan

- Threatened and Endangered Species Component Plan
- Invasive Non-Native Wildlife, Feral Animals, and Nuisance Native Wildlife Control Plan

Multiple aspects of fish and wildlife management overlap with outdoor recreation, conservation law enforcement, integrated pest management, and public outreach. Refer to the following INRMP sections for additional information on fish and wildlife management.

- Compatible Use Outdoor Recreation Program (7.2)
- Recreational Fisheries Program (7.2)
- Conservation Law Enforcement (7.3)
- Invasive Non-Native Animal Species (7.11)
- Nuisance and Injured Wildlife (7.11)
- Presentations and Guided Tours (7.15)

7.1.1 Florida State Wildlife Action Plan

As a steward of significant areas of wildlife habitat in Florida, Eglin NRS cooperates with FWC in implementation of the Florida State Wildlife Action Plan (FWC 2019). This plan (previously the Comprehensive Wildlife Conservation Strategy) is an action plan for conserving all of the state's wildlife and vital natural areas for future generations. It outlines what native wildlife and habitats are in need, why they are in need and, most importantly, what we are going to do about it. The goals of the plan are to: provide a blueprint for management and conservation of all Florida's wildlife, define a common vision for protecting wildlife, design a non-regulatory effort creating partnership to implement the plan through local actions, and target resources to prevent native wildlife from declining to the point of imperilment.

The Florida State Wildlife Action Plan identifies just over 1,000 wildlife species that are "species of greatest conservation need" and 45 different habitat categories, along with the threats to these habitats (FWC 2019). It addresses potential solutions to mitigate or remove threats such as acquisition of important lands, cooperative conservation efforts with public and private landowners, and public education. Eglin NRS will cooperate with this effort by continuing to conduct sound ecosystem management, providing data on species and habitats when available, and conducting monitoring on species and habitats when feasible. Examples of current efforts are shorebird monitoring, sea turtle monitoring, and gopher tortoise surveys.

7.1.2 Required Permits

Eglin NRS must maintain certain permits for monitoring, burning, nuisance animal control, and other natural resource management activities (Table 7-1). These permits are updated annually or as required. Contractors conducting any activities on behalf of NR (i.e., Okaloosa darter monitoring) are required to obtain the applicable permits.

Table 7-1. Required permits* for natural resource management activities.

Permit*		Purpose	Permit Issue*
Federal	Migratory Bird Depredation Permit	Authorizes take, by lethal means, of certain migratory birds (Bird/Wildlife Air Strike Hazard [BASH]).	USFWS
	Bird Marking and Salvage Permit	Authorizes the capture and marking of red-cockaded woodpeckers (RCWs) and snowy plovers.	
	Endangered/Threatened Species Permit: Endangered Species Act Section 10(a)(1)(A)	Authorizes the capture and banding of red-cockaded woodpeckers, inspection of nest cavities, drilling of artificial cavities, installation of restrictor plates, and the training of others in these techniques.	
	Reticulated Flatwoods Salamander Permit	Authorizes monitoring of reticulated flatwoods salamanders. Virginia Tech holds the permit for Eglin Air Force Base (AFB).	
	Eagle Depredation Permit	Authorizes the use of non-lethal harassment activities to discourage eagle presence near the airfields	
	Eagle Nest Take Permit	Authorizes the take of an inactive eagle nest (BASH)	
State	Wildlife Possession Permit	Authorizes keeping gopher tortoise at Jackson Guard	FWC
	Steel Trap Permit	Authorizes the use of up to 50 padded-jaw steel traps to catch/remove destructive furbearers (mainly beavers).	
	Gun and Light Permit	Authorizes the use of a gun and light at night to take depredating feral hogs, coyotes, beavers, fox, and raccoons.	
	Alligator Trapping Permit	Authorizes the capture and holding or relocation of nuisance alligators, depending on size of the alligator.	
	Bear Trapping Permit	Authorizes the salvage of dead bears, haze, or capture and translocate Florida black bears on designated portions of Eglin AFB or Land Reservation	
	Marine Turtle Permit	Authorizes nesting surveys, protection of nests with screens or cages, relocation of nests, night public hatchling releases, maintenance and display of preserved specimens, and stranding and salvage activities.	
	Wildlife Possession/ Institutional Permit	Authorizes the possession of the carcass or parts thereof of a black bear for educational purposes.	
	Open Burning Authorization	Authorizes the utilization of prescribed burning on the Eglin Reservation (issued on a daily basis).	
	Hog Control Permit	Authorizes taking of hogs damaging lands	FDACS
	Open Burning Authorization	Authorizes the utilization of prescribed burning on the Eglin Reservation (issued on a daily basis).	
	Cervidae Herd Health Plan	Authorizes keeping white-tailed deer within approved enclosure (deer pen) at Jackson Guard	

* USFWS=U.S. Fish and Wildlife Service; FWC=Florida Fish and Wildlife Conservation Commission; FDACS=Florida Department of Agriculture and Consumer Services Contractors conducting any activities on behalf of Natural Resources (i.e., Okaloosa darter monitoring) are required to obtain the applicable permits. Refer to section 68A-9.012, Florida Administrative Code.

7.1.3 Climate Impacts on Fish and Wildlife Management

Current fish and wildlife issues, including habitat erosion (inland and sandy shoreline), the spread of invasive flora/fauna, and the potential for increased fire frequency and intensity are likely to persist in the future under different climate change scenarios. Fish and wildlife managers should continue to monitor native species on a regular basis to document any changes that occur due to the shifting environmental conditions. Expected changes in climate are unlikely to push out current invasive species such as feral cats, coyotes, red foxes, and hogs, so monitoring these populations will continue to be an important component of fish and wildlife management. Invasive species management strategies should be flexible enough to evolve and accommodate an evolving array of issues (Hellmann et al. 2008).

Sandy shorelines, which provide important habitat for wildlife at Eglin AFB, are at particularly high risk due to sea level rise and increasing storm surges associated with climate change. Managers can focus on supporting native vegetation in these areas to benefit native wildlife such as shorebirds.

7.2 Outdoor Recreation and Public Access to Natural Resources

Applicability Statement

This section applies to all USAF installations that maintain an INRMP. Eglin AFB **IS** required to implement this element.

Program Overview/Current Management Practices

Eglin NRS strives to promote and develop sustainable recreational opportunities, which include hunting, fishing, trapping, and non-consumptive use, in a manner compatible with the military mission and subject to safety and security requirements. Local communities adjacent to Eglin AFB have strong ties to recreational use of the lands that now comprise the installation and continuing to provide for recreational use of Eglin AFB lands fosters strong public relations.

Eglin NRS also strives to provide quality and affordable outdoor recreational opportunities to Eglin AFB affiliated personnel and local communities for their benefit and enjoyment. It is not an objective to generate maximum revenue from the sale of Eglin AFB public use permits but to maintain an income base necessary for the self-sufficiency of the program. Unlike many other Eglin AFB programs, self-sufficiency is a requirement since very little financial contribution comes from the installation and/or AFCEC level.

The following information is provided as a general overview of the Eglin Outdoor Recreation, Hunting, and Freshwater Fishing program. Detailed information regarding operational activities conducted in support of INRMP goals and objectives, as well as game species management philosophy and recreational emphasis areas, will be addressed in the Eglin AFB Tab 7—Outdoor Recreation Component Plan.

7.2.1 Degree of Public Access

AFMAN 32-7003 requires classification of Air Force managed lands into categories that describe both the degree of public Access for all areas that are identified as suitable for outdoor recreation, as well as categories of Participants that may use area types. An installation or area may have multiple Access and Participant designations (e.g., an area may be designated Open for fishing but Off Limits for hunting, most areas are open to more than one Participant type, but some restrict access to DoD-affiliated persons only). Eglin AFB has managed lands in each category type (Table 7-2). Access and Participant categories are as follows.

Table 7-2. Areas available for hunting and fishing on the Eglin Reservation, by access and participant category.

Access Category	Participant Category	Hunting	Fishing
Open Areas	All participant types allowed	245,789 Acres	14 impoundments, certain streams, rivers, estuaries, and Gulf of Mexico
Restricted Areas	Department of Defense-affiliated persons only	1,613 Acres (Main Base)	Four impoundments, and streams, and estuarine shoreline at Main Base
Off Limits Areas	All participant types allowed but only with authorization of installation commander	210,402 Acres	Waters within 210,402 Acres

7.2.1.1 Access

Open Areas—Unrestricted areas on the installation where hunting, fishing, trapping and outdoor recreation are permitted to all participants, to include the general public.

Restricted Areas—Areas designated by the commander where hunting, fishing, trapping and outdoor recreation are permitted to certain categories of participants, or under special conditions as defined by the commander. The INRMP should state the rationale by which access to an area is limited to certain categories of participants.

Off Limits Areas—Areas designated by the commander as being off limits to recreational hunting, fishing, trapping and dispersed outdoor recreation by any person at any time. These are areas where mission security and safety concerns do not allow such use. The INRMP should state the rationale by which access to an area is designated to be off limits due to security and safety considerations.

7.2.1.2 Participant

Active-Duty Military—Includes Reserve on full-time orders and National Guard on active duty (Title 10 status).

- DoD Civilians
- Active-Duty Military Dependents and Family Members
- Disabled Veterans
- Military Retirees
- DoD Civilian Retirees

Employees of Installation Prime Contractors—Defined as a contractor under a five year or more term contract.

- Civilians enlisted in the National Guard and Reserve that are not on active duty (Title 10 status).
- General Public

Table 7-2 shows the available areas and associated acreage for each category on the Eglin Reservation.

The NRS has taken two approaches to periodically open portions of the installation normally closed to hunting (Off Limits Areas). One approach includes the establishment of conditional hunting areas which fall within the safety footprints of large missions that occur primarily on weekdays. Mission activity permitting, these areas are open to walk-in hunting on weekends and holidays through the use of a manned check station. The second approach for managing limited hunting in portions of closed areas on Eglin AFB is through the use of special-opportunity hunts closely supervised by NRS personnel. Since the early 1990s, the NRS has managed hunts for mobility-impaired and youth hunters. These hunts have been conducted without incident and have provided tremendous public relations benefits to for Eglin AFB.

7.2.2 Coordination and Development of Public Use Regulations

7.2.2.1 Outdoor Activities Committee Process, Charter and Membership

The Eglin AFB Outdoor Recreation, Hunting, and Freshwater Fishing Regulations handbook governs all public use and access to the installation. This handbook and associated map (Figure 7-1) are developed by the NRS, is applicable from October 1–September 30 each year, and approved annually by the Outdoor Activities Committee (OAC). The OAC is chaired by the 96 TW Commander and committee membership comprises representation from a host of military test, training and support organizations which include 96 SFS, 96th Civil Engineer Group (96 CEG), 96 TW/JAV, and the 96th Test Wing, Safety Office.

OAC Charter

- To formally approve, disapprove, or modify new and existing Eglin-specific rules and regulations governing public outdoor recreational activities on Eglin AFB.
- To review and incorporate new state of Florida hunting and fishing regulations to maintain Eglin AFB Wildlife Management Area status.
- To proactively de-conflict and ensure all outdoor recreational activities are compatible with the Eglin AFB test and training missions as well as the missions of various tenant organizations.
- To annually approve the Eglin AFB Outdoor Recreation, Hunting, and Freshwater Fishing handbook and associated map, which is produced and disseminated to the public beginning each September.
- The 96 TW/CC or his/her designated representative chairs the committee.

7.2.2.2 Florida Fish and Wildlife Conservation Commission and Wildlife Management Area Coordination

The FWC is afforded formal membership within the OAC and plays a critical role in the development, coordination and enforcement of Eglin-specific rules and regulations. Prior to the OAC convening each spring, NR personnel meet with regional FWC staff to coordinate proposed Eglin-specific rules and regulations changes, as well as discuss applicable changes to Chapter 68A, F.A.C. As previously discussed, Eglin AFB's designation as a FWC Wildlife Management Area is mutually beneficial and requires annual coordination to codify Eglin AFB-specific rules and regulations and ensure program compatibility with FWC efforts and initiatives.

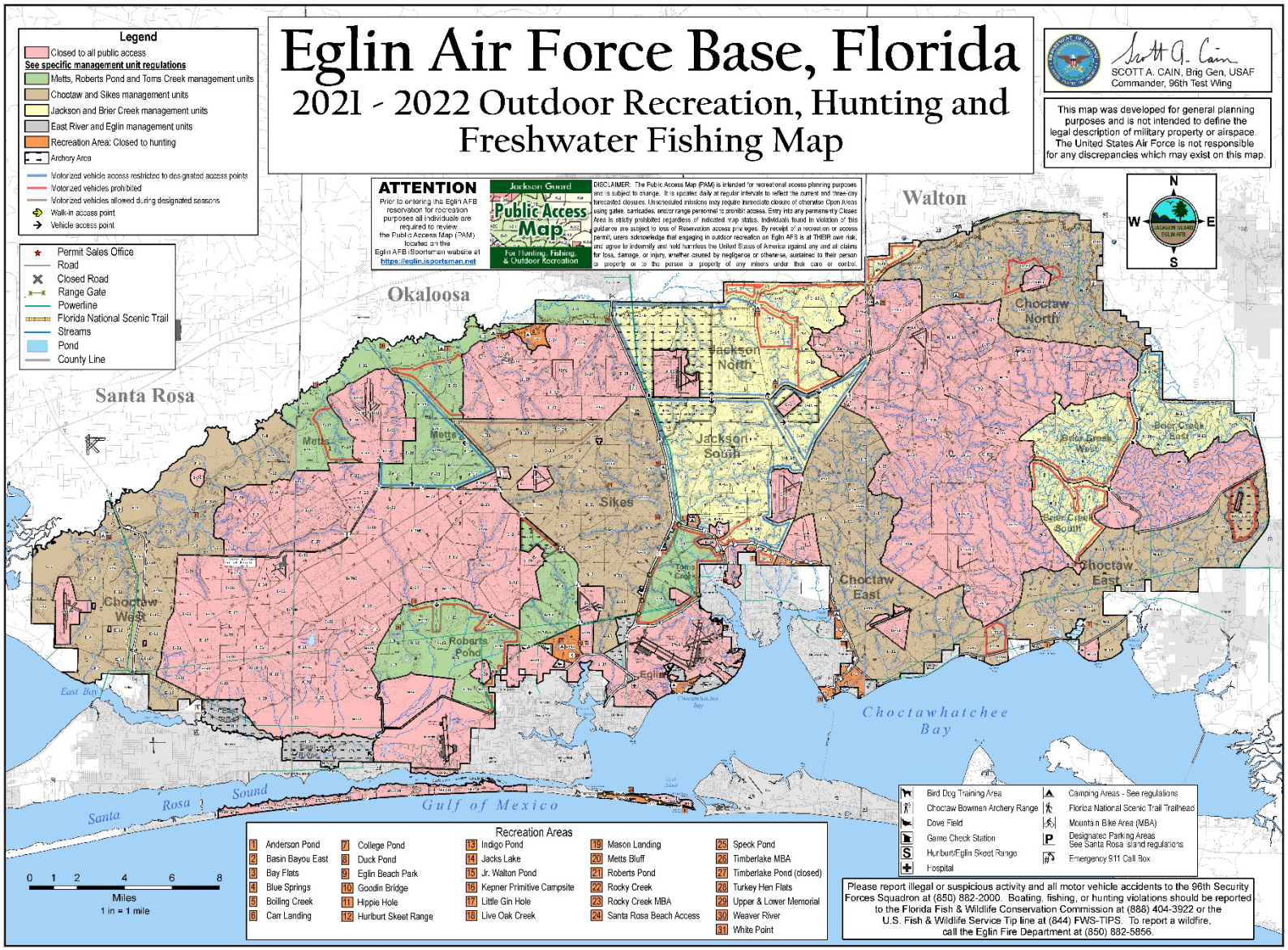

Figure 7-1. Outdoor recreation, hunting and freshwater fishing.

7.2.3 Providing Public Access

7.2.3.1 Impacts of Unexploded Ordnance on Public Recreation

Updates to DoD policy have placed greater emphasis on unexploded ordnance (UXO) and public safety. These changes have far-reaching implications on Eglin AFB's outdoor recreation, hunting, and freshwater fishing programs. Portions of the installation that have been open to public recreation for the last several decades were previously used as air-to-surface gunnery ranges. Most of these ranges were abandoned in the late 1940s and early 1950s and were later prepared and reforested in the 1950s and 1960s. Many of these areas have been commercially harvested and have been prepared and planted a second time. Fortunately, there has not been a single UXO safety incident involving a recreational user or a commercial timber contractor on Eglin AFB.

Multiple measures were taken in September 2000 to increase public awareness of the presence of UXO. An eight-minute UXO awareness and safety video was produced and is viewed by all permit sales customers prior to any permit purchase. A UXO awareness and safety brochure is available and is given to each customer purchasing a permit for other persons and for customers purchasing permits through the mail. Informational UXO caution signs have been posted at all major roads entering the installation from public highways.

7.2.3.2 Tactical Training Areas

Recent increases in military test mission tempo and complexity along with new ground maneuver training requirements have forced NR to improve and update existing public outdoor recreation access procedures and policy. Improvements were required to allow continued outdoor recreation program compatibility with the military mission while ensuring safety and security requirements are met. The cornerstone of this effort, which began in fiscal year (FY)10, was based on 10 Eglin AFB range compartments developed and used for management purposes years ago that, until now, lost significance and usefulness. Encompassing the entire Reservation, these compartments were further divided into 412 sub-compartments, to be known as TTAs, with an approximate average size of 1,130 acres.

As of FY12, use of the Reservation is coordinated through this new land delineation, facilitating accurate communication of mission profiles, safety footprints, and Z clearance authorizations in terms of this "common" grid system. This clear and concise system identifies TTAs not required for military use on a daily basis and serves as the basis for an improved public access policy. TTA access availability information is provided to recreational customers via an Internet-based application. Requiring recreational users to verify TTA availability prior to entering the Reservation allows enforcement personnel to effectively monitor compliance.

There have been challenges to implementing this new system. Whether intentional or unintentional, trespass by recreational users into occupied TTAs can compromise mission capability as well as subject individuals to safety risks. Both of these impacts are unacceptable and could result in permanent closure of large areas currently available for public outdoor recreation. The future of Eglin AFB's outdoor recreation program depends heavily on the success of this effort to develop and implement an easily understood and enforceable public access policy designed to maximize compatible use with the vital and dynamic Eglin AFB military mission.

7.2.3.3 Daily Public Access Map

The Eglin Hunting, Fishing, and Outdoor Recreation program is designed to provide maximum recreational opportunities in a manner compatible with the military mission; however, military missions often require

the temporary closure of large portions of areas typically open to public access. Increased scope and complexity of military operations is requiring more frequent short-term, or daily, closures. In most cases, recreational use of these areas is not compatible with military use. Prior to development of the public access map (PAM), inconsistencies and misinterpretations of road closure data and an antiquated phone notification system put missions at risk of being delayed or stopped due to the presence of individuals engaged in recreational activities. The PAM is based on the TTA "common" grid and visually displays daily closure information via a four-day forecast of anticipated area closures. Prior to entering the Reservation, all recreationalists must first view the PAM to verify area availability. The PAM is automatically updated daily at approximately 0400, 0600, 0700, 1200, 1400, and 1700. The PAM is intended for recreational access planning purposes and is subject to change, and the original phone notification system has been retained to provide multiple methods for recreationalists to confirm TTA closures. Gates, barricades and/or Range personnel will prohibit access in the event unscheduled missions require immediate closure of publicly accessible areas. Entry into any closed area is strictly prohibited regardless of indicated map status. Individuals found violating this guidance may lose their range privileges. The link to the PAM is located at eglin.isportsman.net and Figure 7-2 shows a product visual. Details can be found in Tab 7—Outdoor Recreation Component Plan.

7.2.3.4 Management Unit Concept

Since 1990, NR has employed a management unit (MU) approach to improve the quality of the outdoor recreation experience and to achieve quality-based wildlife management objectives. This approach is necessary given the dynamic and diverse nature of Eglin AFB missions, large size of the installation, widely disparate densities of game species across the reservation, and competing (and often conflicting) interests of public user groups. While the MU concept may appear to create overly complex rules and regulations, in reality this method maximizes the quality of recreational experiences for multiple public user groups within the context of an active and dynamic test and training mission.

Management activities employed to meet individual unit objectives include some or all of the following.

- Motorized vehicle prohibitions, either seasonal or annual
- Perimeter access control with limited entry/exit points
- Conditional access designations (e.g., weekend and federal holidays only)
- Manned check stations to collect hunter pressure/harvest data and to enforce daily hunter quotas
- Hunting season restrictions and method-of-take prohibitions
- Minimum antler point harvest restrictions
- Habitat management (e.g., supplemental plantings, prescribed burning, etc.)

In preparation for FY12, MU boundaries were realigned to integrate the recent compartmentalization effort of the Reservation. In doing so, all MUs are now further subdivided by TTA. It is at the TTA level that NR communicates daily access availability or other pertinent information to recreational users through the internet-based PAM. The culmination of this effort is designed to ensure continued outdoor recreation program compatibility with the military mission. Management units, acreage, and types are presented in Table 7-3.

A description of each MU goals and objectives can be found by referencing Tab 7—Outdoor Recreation Component Plan.

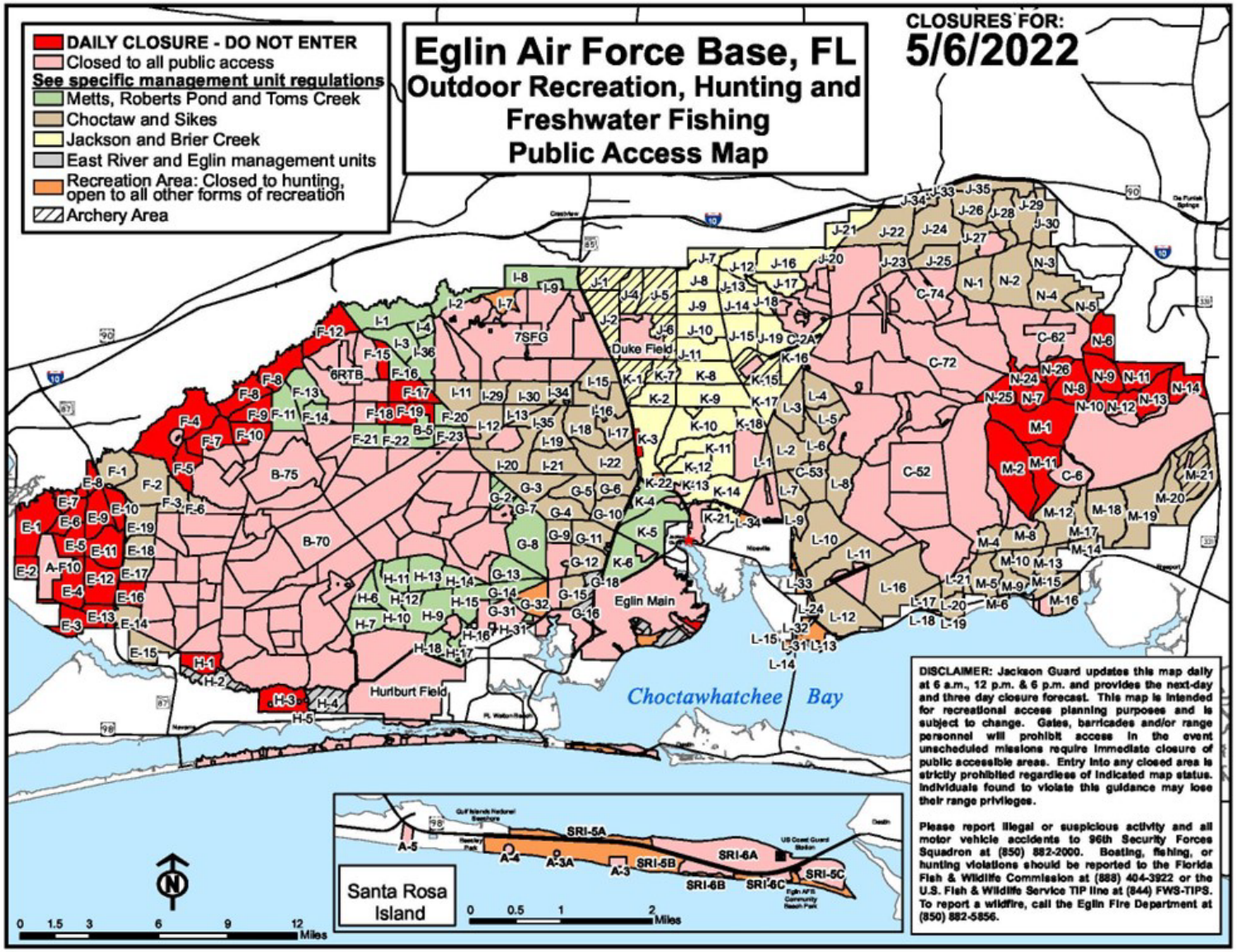

Figure 7-2. Example of outdoor recreation hunting and freshwater fishing public access.

Table 7-3. Management unit types and acreage.

Management Unit	Acres	Unit Hunt Type
Metts	21,401	Stalk
Brier Creek	20,787	Conditional Access-Stalk
Choctaw	102,914	Hunting with Dogs
East River	4,503	Archery Only
Eglin Main	1,688	Archery Only
Jackson	45,981	Conditional Access-Stalk
Roberts Pond	16,753	Stalk
Toms Creek	4,984	Stalk
Sikes Unit	29,307	Hunting with Dogs

7.2.3.5 Public Use Permit System

Permits for all Eglin AFB authorized outdoor recreational activities are available from the NRS located at 107 Highway 85 North, Niceville, Florida 32578. NR office hours are Monday through Friday 0730 to 1630 hours, closed Saturdays, Sundays and federal holidays. Permits may be purchased in person or online. If purchasing in person, a photo identification is required, which includes full name, date of birth, current address, and phone number. The online permit purchasing system is called iSportsman (eglin.isportsman.net) and allows most permits to be purchased 24 hours a day and accepts credit/debit card payments. There is a requirement to watch the UXO video before purchasing a permit. A PDF of the Outdoor Recreation, Hunting, and Freshwater Fishing Regulations handbook is available on the iSportsman website, along with special opportunity hunt applications, hunting season dates, and maps.

- iSportsman tracks all sales and permit types sold, allowing for analysis of permit sale trends and user demographics. During FY21 a total of 26,726 recreational permits were issued, resulting in $443,612 in revenue; 61 percent of which were General Recreation/Fishing Permits and 39 percent were Sportsmen Permits (allows hunting in addition to general recreation).

7.2.3.6 Hunting Program

Historically, the greatest public demand for land areas on Eglin AFB has been for hunting, particularly deer hunting. The Sikes Act, named after local Congressman Robert Sikes, who represented the First Congressional District and lived in Crestview, Florida, was created in part to ensure that sound fish and wildlife management occurred on military installations. The Act was also implemented to ensure that hunting and fishing opportunities were made available to the public on military installations when deemed compatible with the military mission. A summary of areas by hunting type can be found in Tab 7—Outdoor Recreation Component Plan.

The NRS issues approximately 10,000 Sportsman's Permits annually. Sportsman's Permits allow the user to engage in general recreation and fishing year-round, and hunting during established seasons. Established hunting seasons on Eglin AFB include dove, archery, small game, early muzzleloading, general gun, late primitive weapons, youth spring turkey, spring turkey, migratory game bird, wild hog, and furbearer season. Eglin AFB's general gun season is considerably shorter than the state zonal season that is established by the FWC and applies to private lands. This is consistent with most public wildlife management areas (WMAs) which also use abbreviated general gun seasons to manage hunting pressure and resource impacts

on public lands. Tab 7—Outdoor Recreation Component Plan includes general dates for hunting seasons on Eglin AFB.

In addition to Eglin- and MU-specific regulations provided in the Eglin AFB Outdoor Recreation, Hunting, and Freshwater Fishing Regulations handbook, all hunters must follow general state and federal laws and regulations relating to wildlife unless specifically noted otherwise. The Florida Hunting Regulations and Florida Freshwater Fishing Regulations handbooks produced by the FWC annually must be carefully reviewed for information on general laws and regulations relating to fish and wildlife. See the Eglin AFB Outdoor Recreation, Hunting and Freshwater Fishing Regulations handbook and Tab 7—Outdoor Recreation Component Plan for other detailed hunting regulations on Eglin AFB.

7.2.3.7 Hunting Program Management Activities

Eglin NRS conducts the following monitoring and management activities to maintain or improve hunting opportunities on Eglin AFB.

- Annually collect pertinent biological data from game species harvested in intensively regulated MUs, and during special opportunity hunting events
- Analyze/monitor trends in game species populations annually using harvest data, track count surveys, spotlight surveys, and call count transects, following established survey protocols. Investigate new methods and techniques for improved population surveys as needed.
- Maintain as needed 128 established food plots (between 1/8 and 1/4 acre each) in previously disturbed areas across the reservation by fertilizing, liming, mowing, and/or burning.
- Annually plant three established dove fields (average 32 acres each) with wildlife forage seed mix (sorghum, millet, dove proso).
- Annually maintain or improve quality hunting opportunities in specific units via implementation of one or more of the following: daily hunter quotas, motorized vehicle restrictions, supplemental plantings, seasonal access control, increased antler point restrictions, and limiting the number of consecutive hunting days.
- Annually adjust work schedules to allow wildlife staff capability to work Saturdays and peak use days during established hunting seasons to monitor compliance, identify user preference and desire, and promote program goals and objectives.

Special Opportunity Hunts

Six special opportunity hunts have been established by Eglin NRS to provide high quality hunting on Eglin AFB for archery, mobility-impaired, youth, turkey, and wild hog hunters. Utilizing areas that are not normally open to public hunting, hunters generally enjoy harvest success rates in excess of 90 percent. The number of applicants for the special opportunity hunts continues to increase as the reputation of these unique hunting experiences becomes more widely recognized both within the state of Florida, as well as nationally. These hunts require a significant manpower commitment from the Eglin NRS and are conducted within established hunting seasons and in accordance with all other applicable state hunting regulations.

In FY94, the Florida Disabled Outdoor Association (FDOA) and the FWC approached Eglin AFB with a proposal to host a special hunt for mobility-impaired hunters. The FDOA is a non-profit organization that promotes accessible outdoor recreation, assists in compliance of the Americans with Disabilities Act, and provides a source of information to people with disabilities as well as the general public. Modeled after other FDOA sanctioned hunts, Eglin AFB hosted its first Mobility-Impaired Hunt (MIH) in the fall of FY95. Following the logistical success of the first hunt, Eglin AFB has made the MIH an annual event.

The success of the MIH inspired the NRS to expand this special hunting opportunity to youth hunters (10-15 years of age) as well. Designed to introduce youth to the sport of hunting, foster an understanding of the importance of hunting in wildlife conservation, and promote a memorable outdoor experience, the inaugural special opportunity youth hunt took place in FY00 and has occurred every year since. The annual youth hunt typically takes place during the second weekend in February and hunter success rates comparable to the MIH are achieved annually, with most all of the 50 participants harvesting either a white-tailed deer or wild hog.

Recognizing that substantial populations of turkeys reside within areas closed to general public hunting, NRS staff hosted the first special opportunity turkey hunt in the spring of FY01. Each year up to 44 participants are randomly selected to participate during the second and fourth weekends of the statewide spring turkey season and are each assigned approximately 1,000 acres to hunt exclusively. Utilizing areas that receive no direct hunting pressure, the hunter success rate for harvesting a quality gobbler during this event is higher than areas which are open to general public hunting. Details for special opportunity hunts can be found in Tab 7—Outdoor Recreation Component Plan.

Recreational Fisheries Program

Currently 14 ponds totaling 211 acres are managed at Eglin AFB. Two ponds on the installation are natural (Jacks Lake and Blue Springs). The other 12 ponds are small man-made impoundments that were created by damming and installing a spillway structure on existing seepage creeks. Due to the nature of the water in seepage creeks, the water entering these ponds is clear, acidic and low in nutrients, posing serious challenges to fisheries management and decreasing carrying capacity due to the sterility of the water. Past efforts to improve water quality involved applying agricultural lime and fertilizer; however, because of the extraordinary flow rates of these ponds and the low hydrologic retention, most of these efforts were unsuccessful and ultimately caused concerns regarding downstream water quality. Eglin NRS works with the FWC and/or USFWS fish hatcheries for stocking general public recreational ponds. For specific information on each impoundment see Tab 7—Outdoor Recreation Component Plan.

The control of aquatic weeds is another fisheries management challenge on Eglin AFB. The clear water facilitates the growth of submerged and emergent vegetation. Past efforts to control unwanted aquatic vegetation involved the use of aquatic herbicides, partial winter drawdown, and the stocking of triploid grass carp. Eglin Outdoor Recreation Program has discontinued the use of aquatic herbicides specific to recreational fishery improvement due to the expense and concerns over adverse environmental impacts and will explore implementing non-chemical alternatives as needed. Most of Eglin AFB's impoundments were created in the 1950s and 1960s, and many of their spillways are now failing. Since 2009, the Erosion Control Program has decommissioned 12 ponds and restored former impoundments to natural stream habitat. Seven artificial impoundments, Allison, Pearl Creek, Johnson, Turner, Clark Rock Hill, and C-74, await restoration. Eglin NRS has replaced the spillways in Speck, Roberts, Indigo, and Timberlake ponds. Funds are being sought to replace the spillways that are leaking or that have failed on other ponds. In October 2020, the spillway of Jr. Walton Pond failed, blowing out a portion of RR211. The repair effort will restore the pond by replacing the standpipe riser and drainpipe and repair RR211 by FY24. EO 12962, Recreational Fisheries, allows NR to budget for the repair/replacement of damaged spillways in the Air Force Conservation Budget.

Fishing Regulations

All ponds and streams within areas open to outdoor recreation are open to fishing. In addition to the general regulations listed below, specific regulations are available in the annual Eglin AFB Outdoor Recreation,

Hunting, and Freshwater Fishing Regulations handbook and/or may be posted as needed at individual ponds.

Youth Fishing Rodeo

Eglin NRS annually hosts an annual youth fishing event modeled after the FWC special opportunity fishing rodeos. Numerous organizations collaborate to make this event successful. Members of the USFWS assist in stocking catfish raised by the Welaka National Fish Hatchery. When necessary, this stocking effort is supplemented with larger catfish (three to five pounds) purchased from private catfish farms to ensure high catch success rates during this event. Approximately 300 youth anglers participate in this annual event.

7.2.3.8 General Recreation Program

General Outdoor Recreation

Eglin NRS issues approximately 9,000 Recreation/Fishing permits each year. These permits are issued to individuals who do not hunt but use the Eglin Reservation for other recreational purposes such as canoeing, fishing, hiking, picnicking, nature study, swimming, berry picking, and cycling. Individuals who possess a current Sportsman's Permit are not required to purchase a Recreation/Fishing Permit.

Camping

The Eglin NRS provides primitive camping opportunities at 14 locations across the reservation and camping permits are valid for up to 14 consecutive days. Camping is popular on Eglin AFB, with an average of 650 camping permits being issued annually. All campsites are primitive with no water, electricity, or sewage facilities, but tent pads, fire rings, and picnic tables are available at selected sites, and more will be added as funds and time become available. Camping areas and other details can be found in Tab 7—Outdoor Recreation Component Plan.

Bicycling

The public's interest in bicycling has steadily grown in recent years and includes both road racing and mountain biking. Eglin AFB provides unique opportunities to accommodate these interests. For the last several years, members of local road cycling clubs have used portions of Eglin AFB's paved road network due to their relatively low traffic volumes. Eglin NRS has not taken an active role in managing this form of recreation as part of Eglin AFB's outdoor recreation program.

In the mid-1990s, local enthusiasts, in response to a growing interest and demand for mountain bike use, began creating a network of mountain bike trails around and adjacent to Timberlake Pond. This effort was not NRS coordinated or approved. In 1997, a dialogue between the NRS and the trail user groups was developed in response to issues associated with the removal of timber within the area and its impact on the user groups. The designated Timberlake Mountain Bike Area (MBA) now includes approximately 26.2 miles of trails that are popular among off-road cyclists, runners and hikers. In 2018 additional unauthorized mountain bike trails were found established within the Choctaw East MU, just west of the Navy EOD School closed-area complex. Following coordination with the OAC, these trails were sanctioned and now make up the Rocky Creek MBA, boasting approximately 14 miles of biking/hiking trails. NRS office staff coordinate with local cycling clubs annually to discuss improvements such as parking areas, signage, informational kiosks, and picnic tables as needed. Eglin NRS also inspects the Timberlake and Rocky Creek MBAs bi-annually to identify and address maintenance needs and compliance issues.

Beach Access

Access to Santa Rosa Island beaches requires a "free" beach permit available online at eglin.isportsman.net or in person at the NRS. Public interest in this opportunity is high, with approximately 5,250 beach permits issued annually. Similar to the UXO video required for purchasing a recreation permit, the beach permit requires watching a three-minute educational video. This video is designed to educate the public on coastal ecosystems and sensitivity of imperiled species that use the island.

Authorized public recreation on SRI consists of fishing, swimming, sunbathing, and beach walking. The public is directed to seven access points for beach access, and recreational users are instructed to stay below the primary dune line. Examples of activities that are unauthorized on SRI include beach driving, sand dune sledding, night camping, and campfires. Protected species and shorebird nesting sites are posted with "Keep Out—Endangered Species" or "Shorebird Nesting Area" signs. The general public also use the CSB beach areas for beach driving (Gulf County permit required) and other recreation activities, during times of the year when not in use for military missions, on a non-interference basis. Beach driving is prohibited on Eglin AFB property at CSB after sunset from May 1 through October 31 to protect listed species (e.g., nesting sea turtles and shorebirds).

Public recreation on Eglin AFB's beach property has the potential to negatively affect imperiled species such as sea turtles, shorebirds, and Florida perforate lichen. Florida perforate lichen and shorebird areas are fenced and posted to restrict access, but pedestrian disturbance of these areas still occurs. Sea turtles may suffer from direct impacts, harassment, and degradation of dune and beach habitats (details in Sea Turtle section). Enforcement is an important factor in minimizing impacts to these species from public access.

Florida Scenic Trail

The Florida National Scenic Trail (FNST) is one of 11 national scenic trails and is administered by the USFS. This is a long-distance hiking trail which starts in the Big Cypress National Preserve west of Miami and ends at Fort Pickens within Gulf Islands National Seashore, south of Pensacola. It is approximately 1,500 miles long and serves as a recreation asset on both public and private lands.

A 71-mile portion of the FNST on Eglin AFB is a work in progress. As of 2011, two FNST segments totaling 55 miles had been completed. These include a 45-mile segment from Highway 85 to U.S. 331, and a shorter segment from Yellow River to East River off Highway 87. An additional 10 miles on Eglin AFB between Highway 85 and Highway 87 is being developed, which will traverse a significant portion of the scenic and untamed Yellow River Swamp. The FNST will cross the Yellow River from Eglin AFB to NWFWMD land on a footbridge constructed by Florida Trail Association (FTA) volunteers. This multi-year undertaking will connect the Eglin FNST segments with hiking trails in Blackwater River State Forest.

The FNST on the Eglin AFB Reservation is developed and managed under a partnership agreement between Eglin AFB, the USFS, and the FTA. The USFS is the official administrator of the FNST, and the FTA is responsible for trail maintenance. The trail is open to the public and restricted to human foot traffic only (motorized vehicles, bicycles, and horses are prohibited). Overnight camping is permitted at eight designated campsites. All persons using the trail are required to comply with Eglin AFB rules and regulations. Hiker-specific regulations and procedures are posted on iSportsman and available at the NRS Office.

Trail users are required to have an Eglin AFB recreation permit or a thru-hiker permit, which is available on iSportsman or at the NRS Office. Overnight campers are also required to have an Eglin AFB camping

permit (some permit requirements are waived for through hikers). There are six trailheads and FNST kiosks located on U.S. Route 331, Bob Sikes Road, Florida State Roads 285, 85, and 87, and East River.

Trail construction on Eglin AFB began in 1999. In addition to the current 71 miles of hiking trail, volunteers have built numerous footbridges, boardwalks, kiosks, and campsite infrastructures. They have installed informational signage to accommodate trail users and inform them of the Eglin AFB mission and land use requirements.

Off-Road Vehicles

All motorized off-road recreational vehicles (e.g., Low Speed Vehicles, all-terrain vehicles, dirt bikes) are prohibited throughout the installation.

Canoeing

The watershed of the Eglin AFB installation contains over 186 miles of streams and portions of the Yellow and East Bay Rivers. These waters are often used for canoeing, kayaking, swimming, and shoreline picnicking. They are characterized by an arching canopy of swamp titi, cypress (*Taxodium* sp.), and sweetbay (*Magnolia virginiana*) trees overhead and a soft, white, sandy stream bed underneath. Although there are no particular streams that are designated as canoe trails, the waters of Turkey, Rocky, Alaqua, and Boiling creeks are the most widely used waters by Eglin AFB's paddling enthusiasts. By not designating any particular stream as a designated canoe trail, the impact to these watersheds by recreation activities is reduced by not concentrating such activities on a single stream. Eglin NRS trims low lying branches and limbs for easier passage through the waters of the more popular water ways as needed. The trimming of vegetation in and around the streams adds not only to the aesthetics of the streams, but also provides for a safer and more pleasant canoeing experience. Tab 7—Outdoor Recreation Component Plan details canoeing on Eglin AFB.

7.2.4 Climate Impacts on Outdoor Recreation and Public Access to Natural Resources

Climate change may impact outdoor recreation and public access to natural areas at Eglin AFB. The number of HOTDAYS is projected to increase under all scenarios. This may limit the ability of personnel to enjoy outdoor activities comfortably or decrease the attractiveness of some outdoor recreation activities. This increase in high temperatures can even cause significant numbers of mortalities in the case of extreme heat events, which may become more common and more extreme compared to the historical baseline (Fischer et al. 2021). The majority of recreational activities (e.g., bicycling, hiking, running, camping, and canoeing) will still be possible with some limitations under the expected changes in temperature and precipitation on the installation. Fish and wildlife surveys should be routinely conducted to ensure healthy game populations exist to sustain hunting and fishing in the long term; however, there is a strong possibility that sandy shoreline habitats will be severely reduced on Eglin AFB as sea level rise and storm surge intensity increase through 2050. Human activity could compound these effects, leading to the complete erosion of these areas and elimination of the possibility of recreational use along the shoreline (CEMML 2019). In the future, managers may need to restrict recreational activities that take place on sandy shorelines to make space for higher priority military use and improve the efficiency of beach nourishment and stabilization projects.

7.3 Conservation Law Enforcement

Applicability Statement

This section applies to all USAF installations that maintain an INRMP. The installation **IS** required to implement this element.

Program Overview/Current Management Practices

7.3.1 State and Federal Jurisdiction of Fish and Wildlife

Florida owns and has jurisdiction over resident fish and wildlife throughout the state, including Eglin AFB. The FWC established by Article IV, Section 9 of the Florida State Constitution is the governmental body responsible for the conservation of resident fish and wildlife. As such, the FWC establishes rules, regulations and season dates governing the taking of resident fish and wildlife species.

The USFWS has jurisdiction over migratory birds, federally listed T&E species, certain marine mammals, and freshwater and anadromous fish. Eglin AFB is required to comply with federal fish and wildlife laws such as the ESA, which prohibits the unauthorized taking of a federally listed T&E species. ESA requires that federal agencies conserve these species and consult with the USFWS on actions that may affect them.

7.3.1.1 Eglin AFB Enforcement Program Overview

The 96 SFS is the sole Eglin AFB organization tasked with law enforcement responsibility. The 96 SFS provides enforcement support for a broad and dynamic mission. To ensure the 96 SFS is informed of changes in policy and new rules and regulations, NR annually hosts an annual OAC meeting prior to the new FY to discuss changes to the Outdoor Recreation, Hunting, and Freshwater Fishing Regulations handbook.

Significant increases in the scope and complexity of the overall 96 SFS mission as well as reprioritization of effort and sizeable deployments of active-duty personnel in support of the "war on terror" have significantly decreased the efficacy of Eglin AFB's Conservation Law Enforcement Program (CLEP) in past years. These enforcement shortfalls have resulted in some resource degradation over the years and raised concerns that inadequate conservation law enforcement efforts will jeopardize future outdoor recreation opportunities and potentially subject Eglin AFB to punitive action resulting from noncompliance with mandated conservation-related legislation and regulatory requirements.

As an established WMA, Eglin AFB benefits from regular FWC officer patrols and conservation law enforcement support; however, these officers are not solely dedicated to Eglin AFB. To address the above noted decrease in 96 SFS enforcement capacity, in FY18 AFCEC entered into an agreement with the FWC to provide additional conservation law enforcement support to USAF installations within the state via an Enhanced Patrol Program. This Program allowed the USAF to employ off-duty FWC Officers to enforce fish and wildlife related laws, while acting in official capacity and utilizing state issued vehicles and equipment. CLEP funding provided Eglin AFB 60 hours of enforcement effort per week. Prior to working on the installation, eligible FWC Officers were required to attend a two-hour range access familiarization and UXO safety briefing.

To maximize benefit to the AF, the NRS provided the FWC a monthly prioritized list outlining known and suspected compliance issues. Officers were directed to focus on monthly priorities, as well as seasonal compliance related requirements. Examples of seasonal requirements include opening day of hunting seasons, holiday weekend beach use during sea turtle and shorebird nesting seasons and supporting special opportunity hunting and fishing events. Good communication and sharing of schedules between FWC and 96 SFS officers ensured compatibility between these two entities. Enhanced Patrol efforts including vehicle/compliance checks, areas patrolled, arrests made, and warnings/citations issued were compiled into monthly reports and provided to the NRS. While implemented, this program resulted in a drastic improvement in overall compliance and good order and discipline on the installation.

As previously discussed, Eglin AFB is designated as a State of Florida WMA and as such, enables Eglin-specific rules and regulations to be codified into the Florida Administrative Code (F.A.C. 68A-15.063) annually. Federal enforcement of the F.A.C. is authorized by 10 U.S.C. 2671, which allows for F.A.C. assimilation and enforcement through the Federal Magistrate Court system. It is through this mechanism that many of the Eglin-specific rules and regulations designed to improve quality, promote public safety and ensure program compatibility with the military mission are enforced.

The FWC continues to maintain a substantial enforcement presence on Eglin AFB. Whether through routine patrols or coordinated special detail operations, the FWC has contributed significantly to the overall improvement in rules and regulation compliance by the public. Flexible work schedules and specialized training and tactics are FWC capabilities that are invaluable to supporting the overall Eglin AFB mission. Further, FWC's Division of Law Enforcement oversees reporting and investigation of all reported hunter-related accidents in Florida (e.g., tree stand falls, self-inflicted gunshots, hunter-hunter shootings, etc.). As such, and in keeping with the good communication demonstrated to date, FWC will provide Eglin AFB with initial 24-hour hunting accident reports for any incidents that occur on Eglin AFB. Following law enforcement protocols and investigation timelines, full incident reports will also be made available to Eglin AFB once they have been completed. These reports will be entered into 96 SFS blotter to further memorialize the incidents and make them readily available for Eglin AFB's reference as needed.

In FY19, an AFCEC supported effort to obtain two Full Time Equivalent Law Enforcement personnel from the USFWS was initiated and a centralized CLEP program has been created and funded for several Air Force Bases. USFWS has designated these personnel as sworn Fish and Wildlife Officers (FWOs); two GS-9 FWOs began patrolling Eglin AFB under this new initiative in October 2019. With the inception of this additional USFWS conservation law enforcement support effort, the Enhanced Patrol Program initiated with FWC in FY18 was terminated. If it is determined that termination of the FWC Enhanced Patrol Program significantly hampers Eglin AFB's CLEP, NRS staff will advocate for reinstating the program in combination with the USFWS FWO program. In FY21, an AFCEC effort to obtain two additional FWOs (one GS-9 FWO and one GS-11 supervising FWO) was initiated and approved; the additional personnel are expected to arrive at Eglin AFB in spring/summer 2022. The Eglin Test Wing Commander has approved and signed a comprehensive CLEP and coordinated with 96SFS, FWC, USFWS, and local LE.

7.3.1.2 Suspension of Outdoor Recreation Privileges System

In 1997, NR and Range Patrol developed a system that was patterned after successful programs at other DoD installations to suspend hunting, fishing, and outdoor recreation privileges for game law violators. This system has been highly successful and is recognized as significantly improving compliance with rules and regulations and reducing opportunistic game law violations. This system is known as Notice of Violation and Administrative Action (NOVAA) and use the administrative authority of the Installation Commander to suspend recreational privileges. Violators are given a NOVAA citation (ticket) and are notified of their suspension period as well as the appeal process. All violators have the right to appeal their NOVAA within 30 days of receipt. Appeals are reviewed and processed by an Appeal Committee with representatives from the NRS, 96 JAV, and 96 SFS. Suspensions associated with NOVAAs are independent of any judicial or punitive actions levied by state or federal entities.

7.3.1.3 Future Program Direction

Demands on the 96 SFS will most certainly increase over the next few years. With a broadening test and evaluation mission and the arrival of new tenant organizations, direct military use of the Eglin Reservation is expected to significantly intensify. Concern exists that additional demands placed on 96 SFS will result in decreased natural resources law enforcement efforts. Decreased enforcement of natural resources laws

and Eglin-specific public use rules and regulations would unquestionably reduce program quality at a time when the trend for public use permit sales is increasing. The inception of the USFWS FWO program noted above is timely and will help to address concerns with future 96 SFS capacity; however, ever-increasing public use demands may dictate yet additional conservation law enforcement needs. If this is the case, NRS will re-engage to garner support for the previously successful FWC Enhanced Patrol Program. Ideally, 96 SFS law enforcement manpower will also increase proportionally to increased demands. It is, however, uncertain that funding for additional law enforcement manpower will be allocated.

7.4 Management of Threatened and Endangered Species, Species of Concern, and Habitats

Applicability Statement

This section applies to USAF installations that have threatened and endangered species on USAF property. This section **IS** applicable to Eglin AFB.

Program Overview/Current Management Practices

Eglin AFB is home to a number of rare and protected species. See Section 2.3.4—Threatened and Endangered Species and Species of Concern for discussion of regulations and terminology used in this plan. Eglin NRS strives to protect and recover these species in a manner that provides maximum mission flexibility while still ensuring compliance with federal law. To this end, the Wildlife, Fire, and Forest Management elements cooperatively manage and monitor protected species and their habitats in support of the natural resources goals described at the beginning of Section 7.0 and in Section 8.0.

7.4.1 Management and Recovery of Protected Species for Mission Support

Eglin NRS conducts a variety of management activities to conserve and manage protected species habitat, ranging from prescribed burning to the closure of certain forest roads to prevent off-road vehicle damage to sensitive environments. Species-specific management includes population monitoring, habitat management, and reintroduction or translocation. A combination of habitat and species management is used to recover protected species.

When progress is made toward species recovery, mission flexibility is increased. Eglin AFB has made tremendous progress toward recovering both the RCW and the Okaloosa darter and has been rewarded with coverage for NR Okaloosa darter monitoring and management activities through the Special 4(d) Rule (i.e., fewer Section 7 consultations), and a reduction in certain RCW monitoring and management requirements. The RCW population on Eglin AFB exceeded the designated recovery goal of 350 potential breeding groups (PBGs) in 2009. The USFWS down listed the Okaloosa darter from endangered to threatened in 2011 and proposed the delisting of the Okaloosa darter in 2021. The USFWS also proposed down-listing RCW from endangered to threatened in 2021 and both species can withstand current mission impacts with no lasting negative effects on the populations.

7.4.1.1 Endangered Species Act Section 7 and MMPA Consultations for Mission Support

Eglin NRS supports consultations and permitting with federal regulatory agencies regarding potential impacts to T&E and marine mammals associated with the ever-changing missions at Eglin AFB. As detailed in Section 6—RECORDKEEPING AND REPORTING, NR works closely with the 96 TW and other mission personnel in preparing BAs and permit applications, coordinating permit details with the regulators, and briefing the binding T&C or permit requirements to the mission proponents. This liaison between the users and regulators has successfully decreased the time required to obtain permits for mission operations and avoided legal issues with the USFWS and NMFS.

The continuance of good working relationships with the regulators is critical to the continued expedient processing of consultations and hands-off approach due to the trust the regulators have that Eglin AFB is ensuring compliance with all requirements. The development of programmatic BAs to cover multiple activities has allowed Eglin AFB to cover many activities that would otherwise have each required a separate consultation; however, even with programmatic BAs, the number of ESA and MMPA consultations is relatively large for an installation. As the number and complexity of projects continues to increase, a significant effort is required to keep Eglin AFB on the forefront of compliance to enable the mission and avoid delays. All of Eglin AFB Section 7 consultations, BOs, marine mammal permits, and Coastal Zone Management Act (CZMA) documents can be found on the Eglin NRS local drive under EIAP, and a list of current and in-development ESA and MMPA documents can be found in Table 2-14 and Table 2-15.

Marine mitigation support is an essential component of Eglin AFB's comprehensive mitigation strategy to protect marine species from impacts resulting from test and training missions conducted over and in EGTTR waters, Choctawhatchee Bay, and Santa Rosa Sound and reduce the time required for ESA, MSA, and MMPA permits and/or consultations. The emphasis on this marine mitigation support results from the fact that missions are increasingly being conducted offshore as land ranges become more crowded and new test and training requirements evolve. Marine environments and sea states are required for new air-to-surface weapons testing, which is projected to increase in the Gulf of Mexico. Timeframes for obtaining MMPA permits are very lengthy due to NMFS, Marine Mammal Commission, and Federal Register review processes and complicated acoustic analyses with ever-changing acoustic criteria. To comply with the MMPA, Eglin NRS applies for and manages necessary MMPA permits to support the mission and provide maximum flexibility.

7.4.1.2 Natural Resources Compliance Program

After Section 7 consultations with the USFWS and/or NMFS, a concurrence letter or a BO, including an Incidental Take Statement, is sent to Eglin AFB outlining the avoidance and minimization measures and T&C that must be completed in order for the exemption in Section 7 of the ESA to apply; these are legally binding and non-discretionary. Eglin AFB has a continuing duty to monitor the activities covered by each consultation. If Eglin AFB (1) fails to assume and assure implementation of the T&C or (2) fails to require the participants in the activities to adhere to the T&C of the incidental take statement through enforceable terms, the protective coverage of Section 7(o)(2) may lapse.

Eglin NRS provides all T&C and avoidance and minimization measures to proponents for implementation. NR also provides access to NR restrictions and location information through the ERTT. Although it is the responsibility of the proponent to ensure all requirements are met, NR assists with implementation as resources allow. As detailed in Section 6, NR will continue to work with the 96 TW and range users to ensure compliance with natural resource requirement implementation.

7.4.1.3 Management of Federally Protected Species

Eglin AFB management and monitoring activities are done in accordance with applicable species (e.g., sea turtles) recovery plans and permits and are coordinated with the USFWS and the state through INRMP reviews and additional discussions as necessary. In situations where recovery plans are not available, or where specific guidance is not provided in the recovery plan, Eglin AFB confers with the USFWS and other biologists who work with the species to determine accepted methods.

Red-cockaded Woodpecker

Status

The RCW is a federally endangered species endemic to open, mature old growth pine ecosystems in the southeastern U.S. RCWs are the only woodpecker species in the southeast to excavate cavities in live pine trees. They require old growth pines for cavity excavation due to the greater presence of heartwood in older trees and they prefer longleaf pines, which have greater rates of red heart disease, which makes cavity construction easier.

In the 2003 Red-cockaded Woodpecker Recovery Plan, the USFWS identified Eglin AFB as one of 13 primary core populations. A thorough initial survey of suitable habitat on Eglin AFB was conducted from 1989 to 1994. From this survey, and population monitoring that was taking place simultaneously, a population estimate of 169 potential breeding groups (PBGs) was determined to be the baseline population size for the year 1994.

The Eglin AFB population was divided into two subpopulations: the eastern subpopulation, which comprises all clusters east of Highway 85, and the western subpopulation, which comprises all clusters west of Highway 85 (Figure 7-3 and Figure 7-4). The two subpopulations were demographically separate but have recently grown to where they are considered one population. For management purposes they are still evaluated separately. The western subpopulation is large and increasing (386 PBGs in 2021). The eastern subpopulation is smaller but appears to be increasing (120 PBGs in 2021). As of 2021, the current population size is 550 active clusters and 506 PBGs.

In 2009, the RCW population on Eglin AFB reached the designated recovery goal of 350 PBGs; however, it is necessary to maintain over 350 PBGs because the Eglin PBG count is only an estimate (approximately 25 percent of the population is monitored annually for PBGs). Eglin AFB's overall recovery goal has been reached, including the recovery goal of 100 PBGs for the eastern subpopulation. Eglin AFB recently reached the long-term goal of 450 PBGs to allow for more mission flexibility and account for incidental "takes" detailed in Section 7 consultations. Having a buffer of 100 groups above the USFWS recovery goal should reduce the conservation significance and importance of individual RCW clusters on and immediately adjacent to active test ranges and in highly used tactical training areas in the interstitial area. The RCW PBO programmatically addresses Eglin AFB activities with the potential to affect the RCW and establishes a process by which Eglin AFB evaluates potential impacts and determines applicable restrictions. As long as RCW take remains below the thresholds established in the PBO, the majority of actions proposed to occur on Eglin AFB are covered under this PBO, thus reducing the time required for Section 7 consultation. It is expected that the RCW population will continue to grow as a result of habitat improvements associated with prescribed fire and forest restoration efforts, and down-listing under Section 4 is anticipated to occur soon (USFWS 2021).

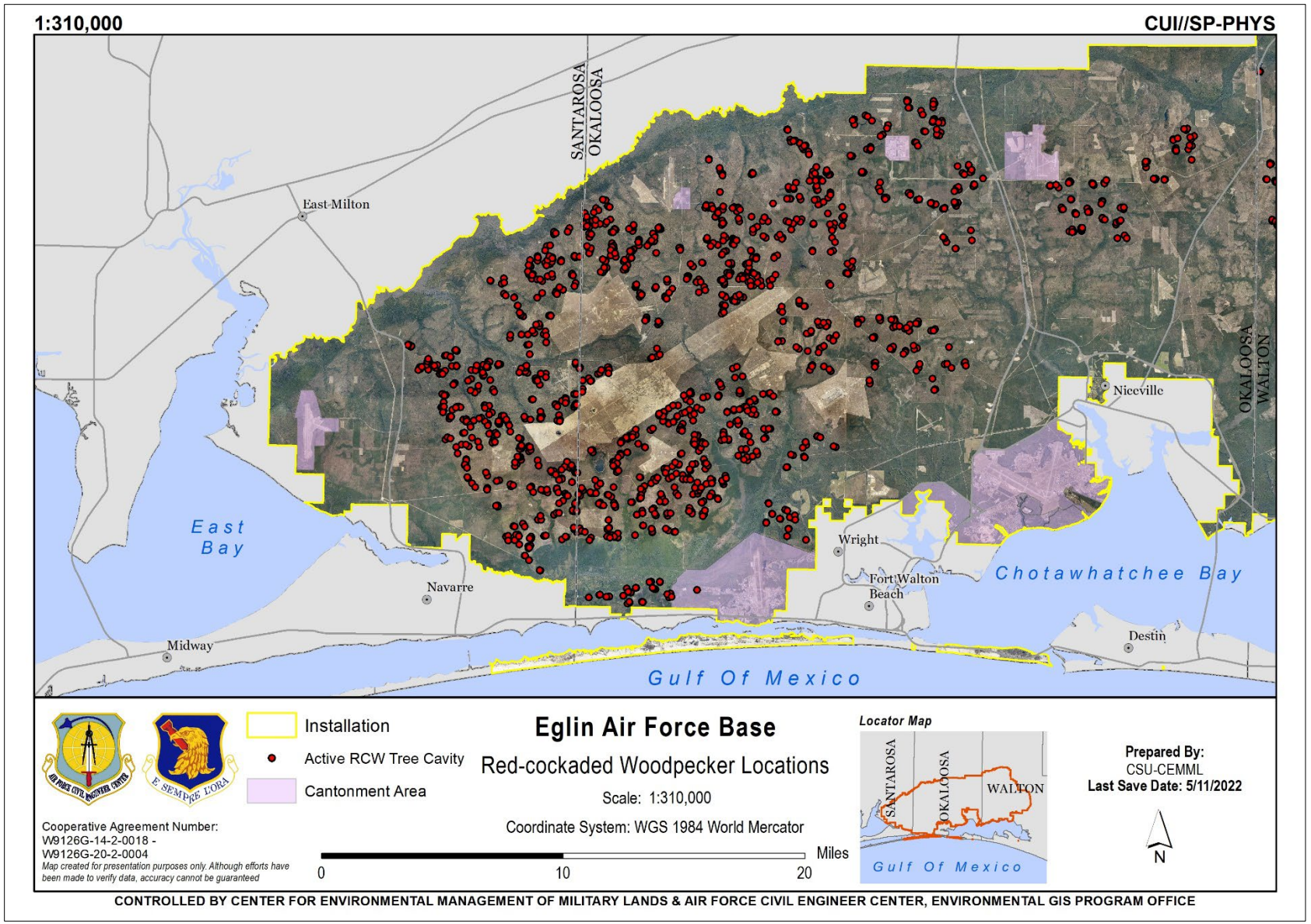

Figure 7-3. Red-cockaded woodpeckers on Eglin Air Force Base (West).

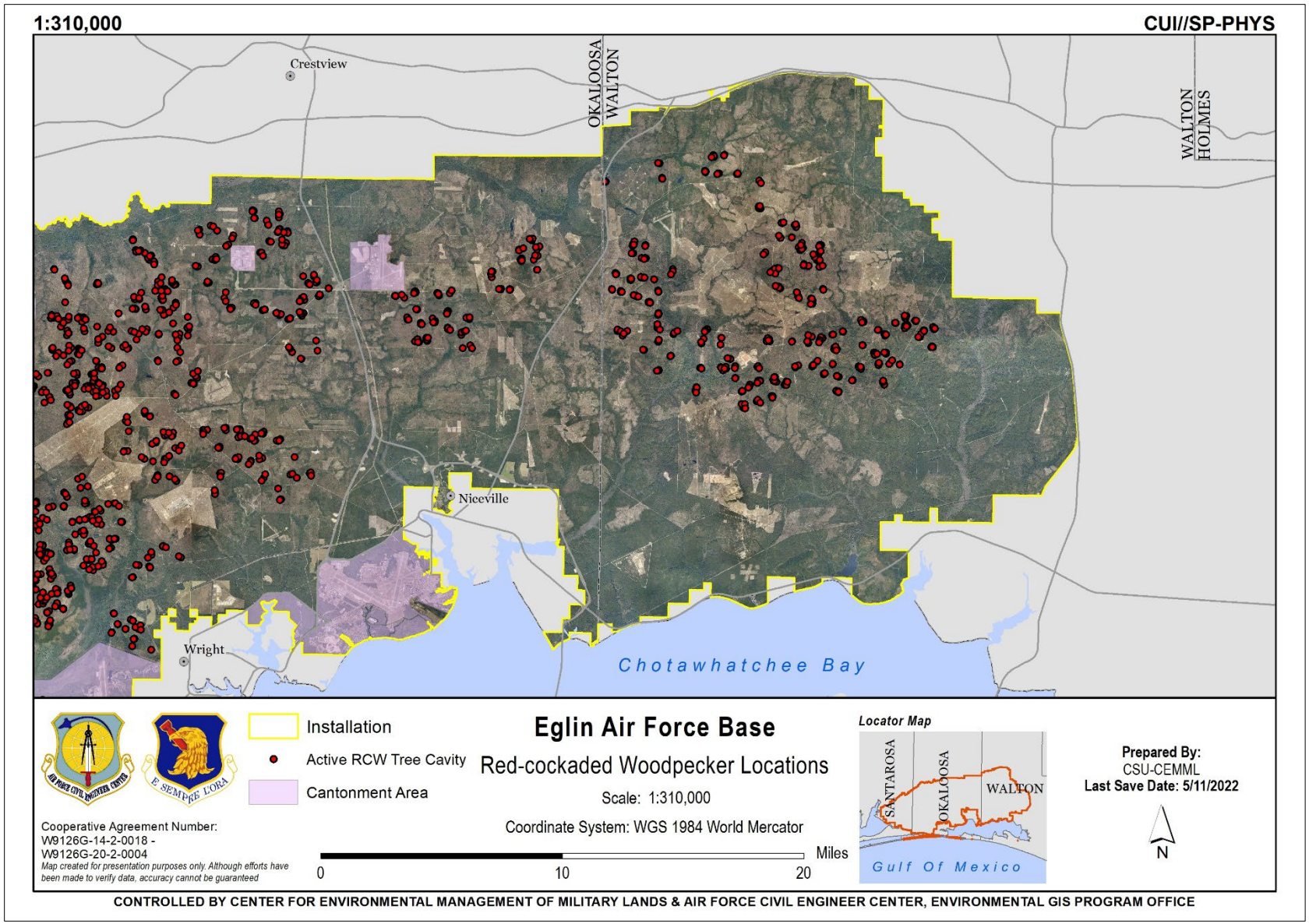

Figure 7-4. Red-cockaded woodpeckers on Eglin Air Force Base (East).

Monitoring Activities

It is critical that there is population monitoring of RCW activity, reproduction, and survival as well as habitat monitoring of the status and trends in sandhill habitat available for foraging. After Eglin AFB reached 350 PBGs in 2009, it consulted again with the USFWS. That consultation resulted in the reduction of a number of monitoring requirements, including those for monitoring for PBGs and surveying for new clusters. Eglin AFB continues to annually conduct tree checks on all active clusters and inactive recruitment clusters to determine annual population size, but has reduced group checks to one-fourth of the active clusters annually to estimate breeding pairs and will survey for new clusters only in areas around active clusters that become inactive and by incidental surveys during other activities (see Tab 8—Threatened and Endangered Species Component Plan for detailed protocols). These changes were approved through re-consultation with the USFWS after Eglin AFB reached its recovery goal. There may also be site-specific monitoring for clusters impacted by certain activities covered with provisional take under the RCW PBO.

Habitat scale monitoring of the status and trends in RCW foraging habitat will be accomplished annually through the during tree checks. Estimates of midstory height, density as well as herbaceous ground cover are estimated and recorded

Management Activities

The following integrated strategies will be used to facilitate population growth and stabilization: cluster rehabilitation (mechanical removal of midstory hardwoods and sand pine), sand pine eradication, hardwood control, thinning of overstocked longleaf pine or slash pine stands, pine plantation management (reforestation), invasive non-native plant control, prescribed burning, artificial cavity construction, and translocation of juveniles.

Artificial Cavity Construction and Translocation

Restoring and constructing cavities is a high priority on Eglin AFB, with more than 1,400 artificial cavities and drill starts constructed since December 1993. The need for artificial cavity construction or the use of restrictors is evaluated each year during site visits. Four cavities will be the standard for the eastern subpopulation, which is still only growing very slowly and where new cavity construction by the birds themselves appears to be limited. In the western subpopulation, which is currently growing rapidly and where the birds appear to be excavating their own cavities at an acceptable rate, artificial cavities will be constructed only in clusters that have fallen below the standard of three good cavities in a total of 350 active clusters. The remaining active clusters in the western subpopulation will be allowed to remain untreated to determine the impacts of discontinuing artificial cavity construction. Box inserts will be used only in emergency situations, such as after hurricanes or tornados, or to quickly replace cavity trees lost due to wildfire or prescribed fire.

Translocation of sub-adult RCWs to augment single birds or to establish new pairs was being used to increase the breeding population of the eastern subpopulation. That management tool, however, is no longer being used as the eastern subpopulation has surpassed its goal of 100 PBGs.

Habitat-Level Management

Wildlife, Fire, and Forest Management elements will jointly evaluate data to prioritize management actions, such as determining which areas are in need of sand pine removal, herbicide (oak removal), and fire

From the RCW habitat perspective, activities will be prioritized on the east side over the west. Habitat management activities will seek to restore recruitment hubs before any other sites (Figure 7-5 and Figure

7-6). All threats within RCW MEAs are to be abated within 0.5 mile of active RCW clusters first, then addressed within one mile of active clusters, and finally, addressed within the CCA. The CCA includes the area required to reach the long-term population goal of 450 PBGs. This concentric strategy will ensure that management progress made in the short-term is not undone by reinvasion of sand pine from within lower priority zones. This methodical approach to habitat improvement will be aimed at eradicating sand pine and maintaining clusters free of mid-story vegetation.

Prescribed Fire

Prescribed fire will be prioritized to maintain RCW habitat that is currently in a maintenance phase (i.e., sites that need no active restoration), with a fire return interval of between two and three years for all active RCW clusters and associated foraging habitat. Without sacrificing the maintenance of existing clusters, prescribed fire will also be applied to the mid-term and long-term management emphasis areas at a frequency that will restore these sites for future cluster activity (with a minimum three- to four-year return interval). This prioritization process is model driven according to the methods described by Hiers et al. (2003).

All active cavity trees will be prepped prior to prescribed burns. Average cavity tree mortality at Eglin AFB without burn preparation is six percent, but when prepared in advance, cavity tree mortality is reduced to two percent of prepped trees in burned areas (Williams et al. 2004). In addition to the fire preparation that will take place around cavity trees, a trained RCW monitor who is familiar with fire behavior will be present on prescribed burns that involve active clusters or recruitment clusters, except those within UXO restricted suppression areas (detailed in Section 7.9). Additional information on RCW fire preparation and RCW monitors is available in Tab 8—Threatened and Endangered Species Component Plan.

Since certain areas of the Reservation have been designated “no suppression zones” due to potential UXO contamination, there are clusters where a monitor cannot be present while fire is on the ground. In these clusters pre-fire prep may be extended out further from the tree or fire-resistant foam may be applied on or around the tree prior to fire being set. All cavity trees in these areas will be checked immediately following the fire to assess any damages and the need for replacement cavities. If any active cavity tree is lost to prescribed fire activities, the cavity tree will be replaced within 72 hours with either a new drilled cavity or a box insert.

During the past ten years, high fire frequency and thorough pre-burn cavity tree preparation activities have limited fire-related tree kill. The RCW PBO comprehensively analyzed the issue of fire-related RCW take.

Sand Pine Eradication

In the absence of frequent fire, this native invasive pine rapidly colonizes a site, reproduces as early as five years, and quickly modifies the fuel bed to reduce the efficacy of future prescribed burns. Monitoring data and research have conclusively shown that sand pine represents the greatest threat to Eglin AFB’s sandhill ecosystem.

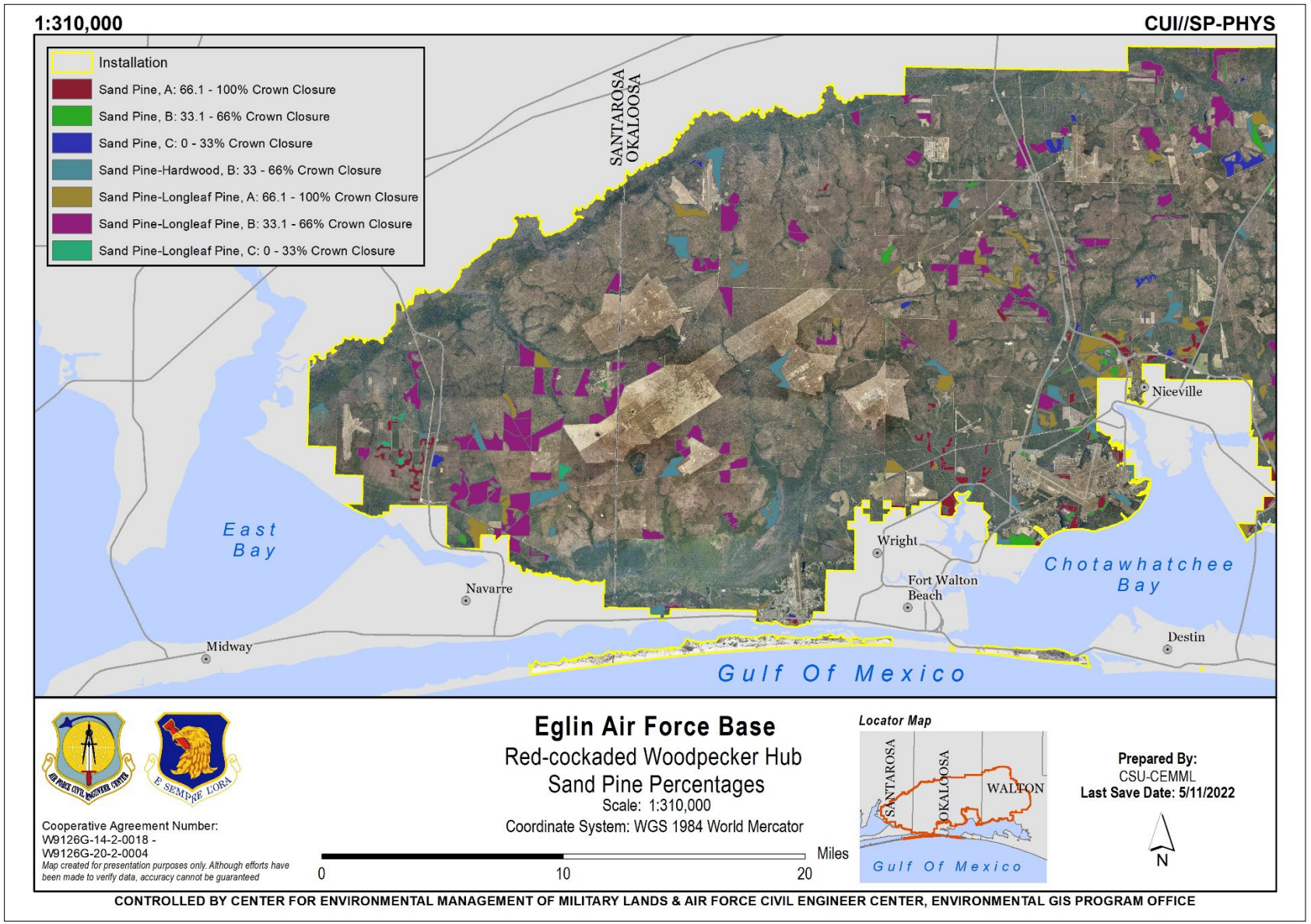

Figure 7-5. Red-cockaded woodpecker hub sand pine percentages (West).

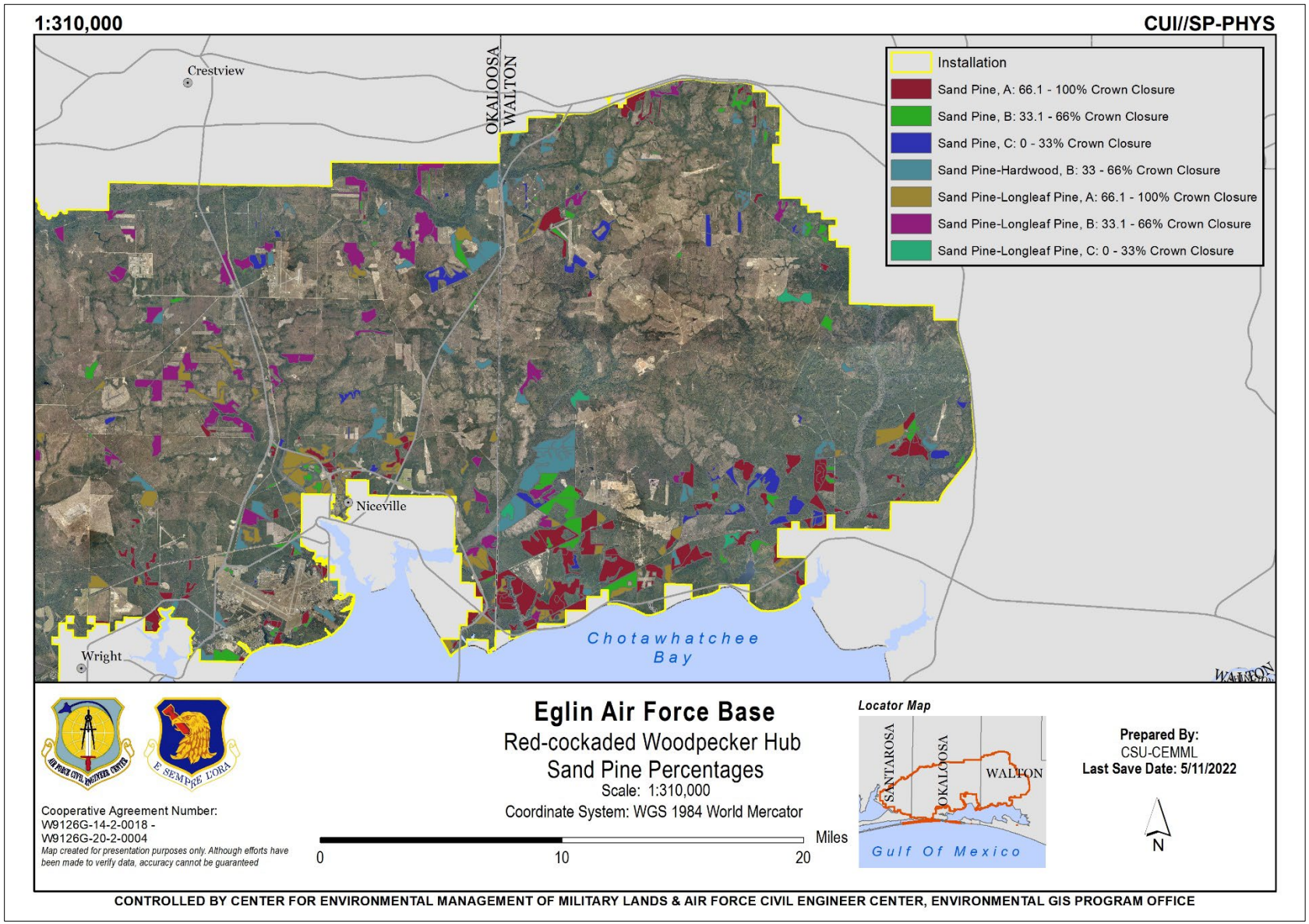

Figure 7-6. Red-cockaded woodpecker hub sand pine percentages (East).

Conservation funds will be prioritized toward TSI to eliminate the threat of current sand pine and future sand pine invasion where encroachment in the mid-story is uncontrollable by fire in and around RCW cluster sites. All foraging areas as determined by the foraging habitat assessment tool should be free of sand pine encroachment. Conservation funds allocated to TSI for RCW habitat improvement will be concentrated in active clusters first and focused on the eastern subpopulation to better align TSI activities with conservation management goals. Prescribed fire will be prioritized to areas two to three years after sand pine TSI has been applied to minimize the likelihood of reinvasion following treatment. Details on sand pine percentages for each RCW hub can be found in Tab 8—Threatened and Endangered Species Component Plan.

Hardwood Control

Conservation funds have been allocated to improve RCW foraging habitat through chemical and mechanical means in areas where hardwoods have exceeded the ability to control with prescribed fire alone or are in densities that are an immediate threat to RCW survival. Application of herbicide will be prioritized for active clusters with excessive (more than 10 percent of the number of canopy trees) large diameter midstory encroachment into the subcanopy (greater than seven feet in height).

Each year, Wildlife, Fire, and Forest Management personnel will jointly designate clusters that face an immediate threat from hardwood encroachment. These clusters will be prioritized for herbicide application. Herbicide applications will be used in the year following a prescribed burn. If oaks persist within active clusters after burning, herbicides approved in the Long-term Vegetation Control BA and BO will be used to target the areas immediately within the cluster (roughly five to 50 acres). Active clusters will be prioritized before inactive clusters, and eastern clusters will be prioritized before clusters in the western subpopulation.

Longleaf Pine Regeneration

Wildlife, Fire, and Forestry Management elements are actively working to develop a plan for thinning longleaf pine regeneration in overstocked stands. Reducing the density of longleaf pine trees throughout a stand will result in healthier mature trees overtime and provide optimal habitat for RCWs by decreasing overstocked stands. The Longleaf Pine Regeneration Plan is expected by 2024.

Slash Pine and Sand Pine Plantations and Reforestation

Longleaf pine should be reestablished where slash pine or sand pine is removed. Since native groundcover is critical to productive foraging habitat), site preparation in RCW MEAs should be minimized; herbicide is preferable to roller chopping. One pass is preferable to two where chopping is necessary. In the reestablishment of longleaf plantations, approved herbicides will be used to enhance reforestation and protect native groundcover.

Additional details about RCW monitoring protocols, population trends, and management actions can be found in Tab 8—Threatened and Endangered Species Component Plan.

Okaloosa Darter

Status

The Okaloosa darter is federally threatened. The entire global population of this species is endemic to the northwest Florida panhandle in Okaloosa and Walton counties. Eglin AFB has management responsibility for 90 percent of the 457-square kilometer (176 square miles) drainage area. This darter occurs in only six small stream systems (249 linear miles) that flow into two bayous of Choctawhatchee Bay. Over the last

15 years, the typical density within 20-meter stream reaches was 2.5 ± 2.1 (mean ± one standard deviation) Okaloosa darters per linear meter of stream. In 2010, a typical 20-meter stream reach supported 2.6 ± 2.2 Okaloosa darters per linear meter (refer to Tab 8—Threatened and Endangered Species Component Plan).

Due in large part to Eglin AFB's restoration efforts, the Okaloosa darter was down listed to threatened in March of 2011. The goal of NR is to have the Okaloosa darter delisted in the coming years; USFWS proposed de-listing the Okaloosa darter at the end of 2021 and a final decision is expected in 2022 (USFWS 2021).

Section 4(d) Rule

The USFWS has the discretion under section 4(d) of the ESA to issue special regulations for a threatened species that are necessary and advisable for the conservation of the species. Threatened species implementing regulations at 50 CFR 17.31 incorporate the prohibitions of Section 9 of the Act for endangered species, except when a "special rule" is promulgated under section 4(d) of the Act for a particular threatened species. This special rule defines the specific take prohibitions and exceptions that apply for that species rather than incorporating all of the prohibitions of Section 9 of the ESA.

The final rule downlisting the Okaloosa darter acknowledges Eglin AFB's significant contribution to its recovery and incorporates a special rule under Section 4(d) of the ESA. The Special Rule 4d described in the Federal Register Reclassification for the Okaloosa darter (USFWS2011c) authorizes take for projects when they are consistent with a USFWS-approved INRMP and the Eglin's Threatened and Endangered Species Component Plan (Tab 8). The Special Rule may be applied to actions that have the scope and purpose to improve darter habitat. Specific actions identified for allowable take of the Okaloosa darter are listed below.

- Prescribed fire for land management to promote a healthy ecosystem
- In-stream habitat restoration
- Unpaved range road stabilization
- Removal or replacement of culverts for the purpose of road decommissioning, improving fish passage, or enhancing stream habitat
- Scientific research and monitoring activities consistent with an approved Okaloosa darter recovery plan, or otherwise approved by the Service, both on and off of Eglin AFB

Eglin AFB documents potential harm for the Okaloosa darter with on-site USFWS personnel and coordinates with the USFWS on use of the 4d rule prior to documenting an action and potential harm. Eglin NRS reports the progress of projects and use of the 4d rule to the USFWS in the annual report.

Monitoring Activities

A long-term monitoring program for the Okaloosa darter was initiated in the spring of 1995. The main objective of Okaloosa darter monitoring is to obtain the population metrics to indicate population stability needed to evaluate management practices that can provide maximum mission support. The darter has been monitored on Eglin AFB by the U.S. Geological Survey-Biological Resources Division and Loyola University New Orleans since 1995. Darters are counted using mask and snorkel visual surveys. The sampling strategy has evolved over the years, with the current method including visual surveys within a 20-meter reach at each of 28 sites. Additional details on survey methods are available in Jordan and Jelks (2008) and the Threatened and Endangered Species Component Plan (Tab 8—Threatened and Endangered Species Component Plan).

The current Okaloosa darter recovery plan does not detail a specific population goal, or the number of monitoring sites required; however, the USFWS agrees that Eglin AFB's efforts are adequate and should continue at current levels to provide data to support eventual de-listing.

Management Activities

Primary threats to the Okaloosa darter are hydrologic alteration, siltation, and temperature alteration from roads, culverts, clay pits, and beaver dams. Additional issues are prescribed fire and/or wildfire breaks that change or alter hydrologic stream flow. A 1992 study identified erosion from borrow pits and roads as a major contributor to the degradation of darter habitat. Based on this study, Eglin AFB contracted with USACE and the Natural Resource Conservation Service (NRCS) to rehabilitate borrow pits and non-point erosion sites. Since 1995, over 510 borrow pits and non-point erosion sites (680 acres) have been rehabilitated and maintained within Okaloosa darter watersheds. Rehabilitated sites are maintained for three to five years or as needed to prevent loss of structural integrity. The abundance of Okaloosa darters in Rocky Bayou drainages has increased during recent years, once again coincident with increased restoration activity. Although these data are only weakly correlative (Figure 7-7), it appears that Eglin AFB's management actions are positively affecting Okaloosa darters and their habitat.

As erosion control activities have been largely completed in Okaloosa darter watersheds, management has focused increasingly on stream restoration. Much work has been focused on the restoration of stream habitat that has been lost to impoundments or other infrastructure (e.g., the Eglin railroad). Projects of this nature include the application of natural channel design principles to restore and maintain stable stream geometry relationships and use bioengineering techniques for areas where floodplains need to be established. Eglin AFB Erosion Control Program restored more than 28 stream crossings with natural channel designs (including decommissioning seven recreational ponds) following removal of man-made infrastructure within the entire Okaloosa darter watersheds. Ranging from 30 to 500 meters of stream construction, excavation of floodplains, and other work, these projects are typically expensive and require the involvement of multiple partners such as the USFWS, FWC, and Mid-Bay Bridge Authority.

One major Okaloosa darter restoration effort focused on the floodplains and stream configuration of Mill Creek, the smallest of the darter streams. The largest stream restoration project to date was completed in 2010 in Anderson Branch, a tributary of Turkey Creek. This project involved the reconstruction of Anderson Pond and the creation of stream channel around the edges of the newly constructed pond to reconnect Okaloosa darters isolated in the upstream portions of Anderson Branch to darters in the downstream reaches. Approximately 400 meters of stream were constructed in a floodplain excavated into a hillside which originally served as the bank of Anderson Pond.

Additional details about the Okaloosa darter monitoring protocols, population trends, and management actions can be found in the Threatened and Endangered Species Component Plan (Tab 8—Threatened and Endangered Species Component Plan).

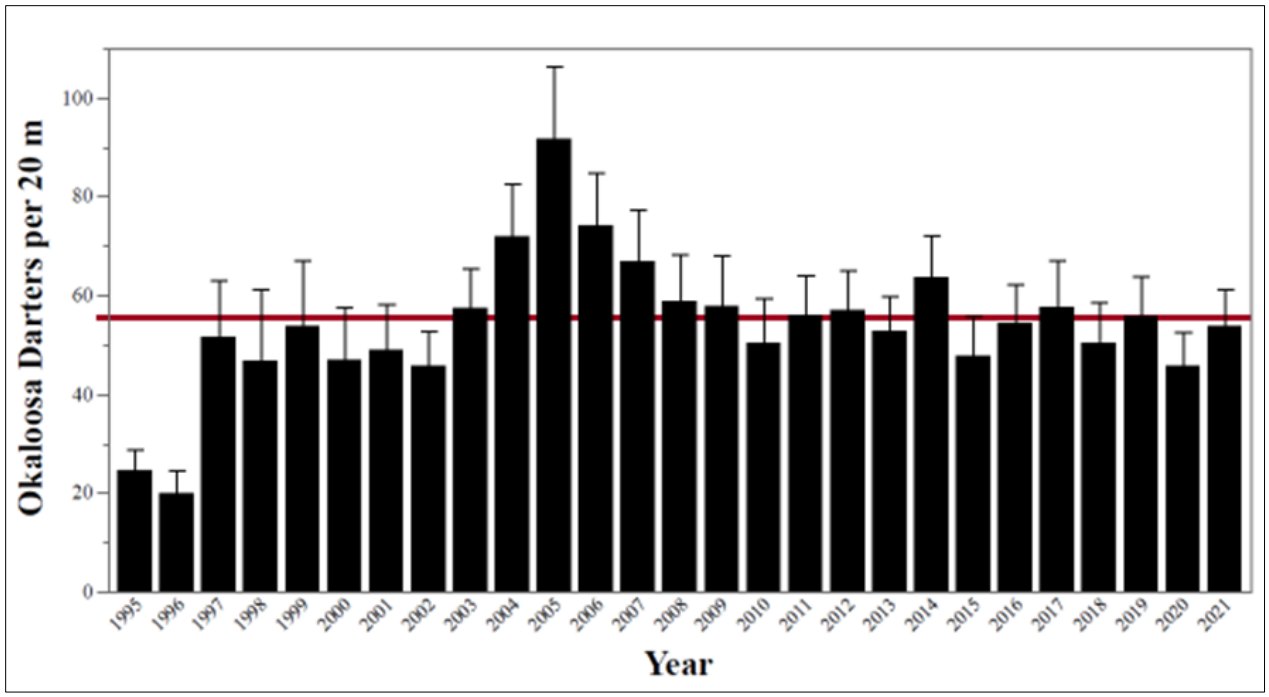

Figure 7-7. Annual variation in mean (± 1 SE) number of Okaloosa Darters observed at all sites sampled from 1995-2021. The horizontal line is the overall mean for the entire sampling period.

Reticulated Flatwoods Salamander

Status

The RFS is federally endangered. On Eglin AFB, the species was previously known as the flatwoods salamander (*Ambystoma cingulatum*) and was federally threatened. Based on mitochondrial DNA, morphology, and allozymes, two species are now recognized. When this designation was officially recognized, the USFWS classified the RFS (the species occurring west of the Apalachicola River) as endangered. The split effectively reduced the known population of the salamanders by over half. Optimum habitat for this small mole salamander is open, mesic (moderately wet) woodlands of longleaf or slash pine flatwoods that contain shallow, ephemeral wetlands that are maintained by frequent fires to prevent buildup of understory vegetation. Males and females migrate to these ephemeral wetlands during the cool, rainy months of October to December. The females lay their eggs in vegetation at the edges of the ponds. RFS may disperse up to 450 meters from breeding sites to upland sites where they live during the non-breeding season.

Eglin AFB historically had three separate populations of RFS. Eglin AFB's current goal is to maintain and recover RFS populations within the core geographic areas of Eastbay Flatwoods and Oglesby/Alligator Creek, as well partnering with FWC to expand recovery efforts on the State conservation lands immediately to the west of Eglin AFB on Escribano Point WMA. Research data and recovery strategies can be found in the Threatened and Endangered Species Component Plan (Tab 8—Threatened and Endangered Species Component Plan).

Eglin AFB supports approximately 17,000 acres of potential RFS habitat in mesic flatwoods, with 29 known breeding wetlands and an additional 81 sites that may have the potential to function as breeding habitat.

RFS and the number of active breeding wetlands both appear to have declined in number since the original Eglin AFB surveys in 1993 and 1994, due in part to several years of prolonged drought in the late 1990s and early 2000s.

Due to the management detailed in the Eglin AFB INRMP and Tab 8—Threatened and Endangered Species Component Plan, Eglin AFB was not included in the CH designation even though it hosts a significant portion of the known remaining occurrences of RFS.

Monitoring Activities

The draft Recovery Plan for the RFS was published in March 2021, which thereafter was converted into the final plan and is intended to be a "living document." A long-term monitoring protocol for this species will be developed once initial research into life history and distribution is completed. In the interim, dip-net sampling is being conducted annually in all historically known breeding ponds, and a portion of suitable breeding ponds are resampled annually. During years when known sites are occupied, Eglin AFB increases monitoring intensity.

As a result of the RFS being listed as endangered by the USFWS more information is needed on the status and habitat requirements of this species. Research priorities include determining effects of a suite of wetland restoration techniques to improve management of breeding wetlands and describing basic population demography. These data will be used to evaluate the effects of fire history on habitat and population trends. Details on habitat monitoring are available in the Threatened and Endangered Species Component Plan (Tab 8—Threatened and Endangered Species Component Plan). A monitoring scheme will ultimately be developed from this research to assess long-term trends.

Management Activities

Active management (e.g., hardwood control) for the RFS is concentrated in historically occupied RFS habitat (most of which is south of the East Bay River), Efforts to protect RFS and its habitat while facilitating the Eglin AFB mission have led to the establishment of a 1,476 foot (450-meter) buffer area from the edge of known breeding wetlands under agreement with USFWS (2017a) under Section 7(a)(1) of the Endangered Species Act. All other non-breeding or potentially-breeding ponds are protected by BMPs and other restrictions that apply to all wetlands on Eglin AFB. The buffer restrictions apply for forest management operations, fire suppression activities, mission operations, and other ground disturbing activities within this buffer area to minimize the potential for direct impacts to salamanders, the introduction and spread of invasive non-native plant species (INPS), and alterations to hydrology and water quality. The only timber management that currently occurs in RFS areas is small-scale sand pine removal; however, longleaf pine may be harvested within the buffer in the future in accordance with the timber management practices guidelines mentioned previously and under consultation with USFWS.

Prescribed Fire

Prescribed fire is used to improve habitat conditions by reducing hardwood encroachment in the wetlands and maintaining the open structure of the surrounding flatwoods. Historically occupied RFS habitat is a priority input into the Fire Prioritization Model, with a target fire return interval of every two years.

There are additional issues presented by the close proximity of the urban interface to RFS habitat, especially in the East Bay Flatwoods. Permanent firebreaks must be maintained along the urban interface, and education and coordination in the Florosa and Hurlburt Field areas are necessary regarding the need for prescribed fire. To limit the potential for rutting, a low ground pressure positrack vehicle or D.R. Mower pulled behind an all-terrain vehicle (ATV) is used only during dry periods for mowing firebreaks near RFS

habitat, and when possible only one pass is made on a cut. For two sections of firebreak along the interface where the vegetation was too thick for Eglin AFB equipment, Jackson Guard requested assistance from the Florida Forest Service Mitigation Team to establish an initial firebreak with a Gyrotrac. The Eglin WSM intends to maintain these firebreaks in perpetuity. Although all efforts are taken to avoid ground disturbing fire suppression methods in salamander habitats, in emergency situations, plow lines may be necessary to avoid escape of fires to adjacent urban areas. In these situations, NR conducts restoration activities to repair damage and restore natural hydrology.

In an effort to control hardwood encroachment and reduce litter and duff in salamander pond basins, efforts have been made recently and will continue to be made to burn the surrounding flatwoods earlier in the growing season when the pond basins are inundated and then apply fire directly to pond basins once sufficient drying has occurred. The Eglin WSM will continue working closely with the Wildlife Element and Virginia Tech to target pond basins for burning under the appropriate soil moisture and weather conditions with the intent of burning all pond basins on a minimum of a three-year rotation.

Hardwood Removal

To reduce hardwood mid-story and encourage the growth of herbaceous understory, NR evaluated the habitat condition in both historical breeding ponds and ponds that have potential to be breeding ponds. A subset of 10 wetlands that were determined to have mid-story encroachment were treated with mechanical removal of the mid-story followed by a cut-stump application of herbicide. Mechanical means consisted of chainsaws or other bladed equipment to remove hardwood stems less than six inches in diameter. At half of the sites cut brush was removed from the pond by hand and the other half the brush was retained in an attempt to add fuel for future prescribed fires to carry through the wetlands. Additional sites may be treated after evaluating the response of these 10 wetlands to the mid-story removal treatment.

In addition, mid-story hardwood removal is currently conducted within six degraded pond basins in the Eastbay flatwoods area of Eglin AFB. These sites are serving as impediments to salamander dispersal within occupied pond complexes and preclude natural re-occupancy of sites with high quality habitat. Hardwood encroachment at these sites has advanced to the point that the use of heavy machinery to assist with woody vegetation removal is warranted. Recovering suitable habitat within these “stepping stone” sites should assist with natural dispersal of RFS. Additional details about hardwood removal at these “stepping stone” sites is located in the Threatened and Endangered Species Component Plan (Tab 8—Threatened and Endangered Species Component Plan).

INS Control

Non-native animal species, mainly the feral hog (*Sus scrofa*), also impact RFS ponds, primarily through alterations in hydrology and water quality degradation from rooting. A feral hog management program is being implemented on Eglin AFB to reduce the hog population (USDA-Animal and Plant Health Inspection Service and USAF 2003). Feral hog trapping is being directed in RFS areas with documented feral hog damage. Red imported fire ants (*Solenopsis invicta*) have been documented in several RFS ponds, and small-scale control efforts are conducted using steam treatments. In addition, the base has introduced South American parasitic phorid flies (*Pseudacteon* sp.). The fly lays an egg on a worker ant that hatches into a larvae, moves into the ant’s head, develops, and then decapitates its host. Six different species of phorid flies have been introduced across the southeast U.S. from Texas to Florida (USDA 2017a).

INS (plant species) are also a threat to salamander habitat. Due to proximity to the urban interface, the East Bay Flatwoods (where almost all of the historically occupied RFS ponds are on Eglin AFB) is particularly susceptible to INS. Eglin NRS treats documented locations of INS in salamander habitats.

Vehicles (trucks and ATVs) rutting roads and going off-road has the potential to adversely impact salamander habitat and has therefore been addressed with road barriers and rule changes for outdoor recreation. Poles and cables have been placed on many tertiary roads to limit vehicular access; however, off-road driving continues to be a problem in certain RFS wetlands. Eglin NRS will continue to address this issue with requests for law enforcement support. Illegal trash dumping has also been a problem, and numerous trash cleanups have been conducted in the area and will continue on an as-needed basis.

Additional details about monitoring protocols and management techniques are located in Tab 8—Threatened and Endangered Species Component Plan.

Florida Perforate Lichen

The Florida perforate lichen (*Cladonia perforata*) is federally endangered. It is endemic to Florida, occurring in three disjunct locations (Eglin AFB, Lake Wales Ridge, and East Coast). This lichen occurs at fewer than 30 sites throughout its range, most of which are threatened by habitat loss due to development or agricultural conversion, human disturbance, and hurricane overwash. Three of the known populations occur on Eglin AFB SRI property. The largest of the three populations persists just west of the Destin pass. In June 2000, two reintroduction populations were established in the area where populations were lost to Hurricane Opal, near Test Site A-10 on the north side of SRI. Monitoring of the lichen populations is accomplished according to the protocol set forth in Tab 8—Threatened and Endangered Species Component Plan. The primary management for this species is to maintain fencing and posting around lichen areas to restrict access; however, even with posting, certain lichen areas at the public access beach are still impacted when people ignore the fencing and posting. Further information regarding Florida perforate lichen management can be found in the Threatened and Endangered Species Component Plan (Tab 8—Threatened and Endangered Species Component Plan).

Loggerhead, Atlantic Green, Kemp's Ridley, and Leatherback Sea Turtles

Status

Currently, four protected species of sea turtles have been documented nesting on Eglin AFB's barrier islands. These species include the loggerhead, Atlantic green, Kemp's ridley, and leatherback sea turtles. The loggerhead and Atlantic green sea turtles are federally threatened, while the Kemp's ridley and leatherback are federally endangered. The loggerhead is the most common of the four species and it nests every year on Eglin AFB's beaches including parts of CSB in Gulf County and SRI in Okaloosa and Santa Rosa counties. Loggerheads are specifically northwest Atlantic Distinct Population Segment (DPS) loggerheads, and greens are primarily north Atlantic DPS (all nesting turtles are north Atlantic DPS and approximately 96 percent of juveniles on the foraging grounds are as well) with approximately four percent of the juveniles on the foraging grounds being south Atlantic DPS. Atlantic green sea turtles typically nest on Eglin AFB's beaches every other year and in lower numbers. The Kemp's ridley sea turtle is a rare nester on Eglin AFB's beaches that was first documented in 2008. The leatherbacks very rarely nest on SRI.

Peak loggerhead nesting on SRI occurs in June and July, with approximately 86 percent of nests established during this period. In addition, SRI supports the largest number of Atlantic green sea turtle nests in northwest Florida which usually occurs every other year. Leatherback nesting has been documented only three years on Eglin SRI, during 2000, 2012 and 2018. In 2008, there were three Kemp's Ridley sea turtle nests laid on Eglin AFB property, and since 2008, nests have been documented regularly.

Monitoring Activities

The USFWS delegated the authority and responsibility for monitoring sea turtle nesting and hatching to the State, so Eglin AFB maintains appropriate permits with the State for these activities at SRI and CSB. The State permit has very specific survey and monitoring protocols that Eglin AFB must follow (summarized below), including daily 100 percent surveys during sea turtle season. At SRI, monitoring began in 1989, and since 1998 surveys have been conducted by trained volunteers under Eglin AFB's permit. At CSB, University of Florida graduate researchers have conducted the surveys from 1994 to 2014. The same personnel are currently conducting the monitoring but through U.S. Geological Survey (USGS).

Daily early morning sea turtle surveys and monitoring are conducted each year at SRI and CSB (May 1–October 31) until the last nest has either hatched or has reached 80 days incubation, at which time the nest is evaluated per state protocol. These surveys are intended to locate the crawls of nesting female turtles, determine the species of turtle by examining crawl characteristics, determine whether the crawl is a nesting crawl or a false crawl, place protective screening over the nest to deter predators, and mark the nest location. The objective of the sea turtle monitoring program is to provide location information (for mission avoidance) and annual data on the distribution and abundance of sea turtle nesting activity on the three miles of CSB beachfront and 17 miles of SRI beachfront on Eglin AFB.

At each nest, four basic measurements are taken: crawl length, crawl width, distance of body pit to vegetation line, and depth to clutch. Nests are marked with stakes, sea turtle nest sign, and surrounded with surveyor flagging tape. All sea turtle nests located are screened to prevent depredation. Nests are then monitored throughout the entire incubation period for potential storm damage, hatching activity, and depredation. Nests are only relocated if threatened by erosion, inundation, depredation, or if approved as a condition of a Section 7 consultation. Each nest is closely monitored to determine the precise duration of incubation, and to gather data on the emergence of hatchlings, depredation, and possible effects from artificial lighting (hatchling disorientation), beginning at the 60th day from initial discovery.

Recent years of tagging and tracking efforts by USGS have provided valuable information of sea turtle temporal and spatial utilization of the Gulf of Mexico. Future coordination between Eglin NRS and USGS with tagging and tracking data will provide significant growth of knowledge and support Section 7 consultations.

Management Activities

The primary goal of sea turtle management on Eglin AFB is to provide the highest level of capability and flexibility to the military testing and training mission while meeting the legal requirements of the ESA and other applicable laws by establishing strategic management objectives which are subject to change from consultation with the USFWS, changing circumstances, new mission requirements, or new scientific information. The main role NR plays in the management and conservation of sea turtles is to locate, mark, and protect sea turtle nests; assess potential impacts to sea turtles from proposed mission activity; recommend conservation measures to avoid impacts to nesting sea turtles, their nests, and emerging hatchlings; and relocate turtle nests under certain permitted conditions. Beachfront mission activities are minimized during sea turtle nesting and peak hatching periods in June, July, August, and September; missions that are approved during this period through the Section 7 consultation process are subject to the terms and conditions contained in their respective BAs (requirements summarized in EAFBI 13-212), including pre-mission briefings covering mission specific requirements to minimize impacts.

Predator Control

Eglin AFB is a member of the Northwest Florida Partnership to Protect Endangered and Threatened Species on Coastal Public Lands, which use an integrated management approach to control species not native to coastal areas such as feral cats (*Felis catus*), red fox (*Vulpes vulpes*), and coyotes (*Canis latrans*). Eglin AFB NRS has also participated in the USFWS/USDA Endangered Species Protection program to conduct predator control on the SRI and CSB. These efforts have significantly reduced the depredation of sea turtle nests. Additional information on these activities is provided in Section 1807.11 Integrated Pest Management Program.

Impact Avoidance Measures

The primary management concern for sea turtles is to minimize the potential for impacts from mission and recreation activities. Potential impacts include direct impacts to nests and turtles, harassment due to noise and lighting, and habitat degradation. In addition to the monitoring and predator control measures described previously, NR also implements the additional requirements summarized here. On an annual or as required basis, NR surveys and re-establishes public access control measures on SRI and CSB to protect dune habitats which are important for island stabilization. Nests are also marked for avoidance.

NR management, monitoring, and enforcement activities also have the potential to affect sea turtles; therefore, they also require impact minimization measures. To address these concerns, the Eglin NRS implements the following management actions during sea turtle season (May 1–October 31).

- Beach driving during sea turtle season on SRI is only approved for Eglin Range Patrol (security purposes), NR personnel (management and monitoring activities), and mission activities that have been previously authorized through Section 7 consultation.
- Low-pressure sodium vapor lighting has been installed at all test sites along SRI and CSB.
- Adherence to requirements in the *Gulf County Coastal Habitat Conservation Plan*.
- Continued dune protection as needed.
- Eglin NRS participates in Florida's sea turtle stranding and salvage network program. Additional details about these species including monitoring protocols and management actions are located in the Threatened and Endangered Species Component Plan (Tab 8—Threatened and Endangered Species Component Plan). and Eglin AFB's Beach Management Plan.

Gulf Sturgeon and Gulf Sturgeon Critical Habitat

Status

The federally threatened Gulf sturgeon is an anadromous fish that occurs in most major river systems from the Mississippi River to the Suwannee River, Florida and in marine waters from the central and eastern Gulf of Mexico to Florida Bay. This large fish occurs predominately in the northeastern Gulf of Mexico, feeding in offshore areas and inland bays during the winter months and moving into freshwater rivers during the spring to spawn. Migration into freshwater generally occurs from March to May.

Gulf sturgeon CH was designated in 2003. Choctawhatchee Bay, Santa Rosa Sound, Yellow River, Shoal River, Blackwater Bay, East Bay, and the Gulf of Mexico, out to one nautical mile offshore of SRI and CSB have been designated as CH. It is important to note that the CH in Choctawhatchee Bay is for the main body and Hogtown Bayou, Jolly Bay, Bunker Cove, and Grassy Cove. All other bayous, creeks, and rivers are excluded at their mouths/entrances; however, Gulf sturgeon may still occur in them-- to include those abutting Eglin AFB property.

Monitoring Activities

Over the past few years, Eglin AFB has participated in a joint study with the USFWS, NMFS, and USGS to tag and track sturgeon from multiple Gulf rivers. DoD has provided funding to track Gulf sturgeon movements in the Gulf of Mexico, specifically within the nearshore waters off of the SRI Training Complex. A two-year study funded by the DoD Legacy Resource Management Program and conducted by Eglin NRS scientists has confirmed adult Gulf sturgeon occurrence and movement patterns in the Gulf of Mexico in the nearshore waters of SRI. More recent observations using similar monitoring methods has revealed seasonal sturgeon occupancy within Weekley Bayou and Rocky Bayou. This has led to a significant increase in the amount of knowledge concerning spatial and temporal distribution of Gulf sturgeon and will reduce Section 7 consultation timelines and provide more mission flexibility. By knowing where and when sturgeon concentrate in the Gulf, estuarine habitats, and rivers, missions can avoid potential impacts by avoiding areas sturgeon frequent. Refer to Tab 8—Threatened and Endangered Species Component Plan for a more detailed description of the scope and results of this study. With a better understanding of sturgeon habitat use patterns, Eglin AFB will be better equipped to determine future management plans and minimize impacts from mission activities, thus maximize range capabilities. Eglin AFB will also continue to coordinate with other organizations and agencies for data sharing and collaboration to further investigate sturgeon movements and distributions near Eglin AFB to assist with Section 7 consultations.

Management Activities

Eglin NRS does not conduct any active management for Gulf sturgeon at the present time, but passive management measures are being conducted to reduce sedimentation into the Yellow River system. These erosion control measures include borrow pit reclamation, road closure and restoration, and use of BMPs when conducting road maintenance; details are available in Tab 10—Erosion Control Component Plan. Proposed bank stabilization construction is scheduled for winter 2022/2023 on the Yellow River east of Metts Bluff in partnership with Florida FWC and NRS. The proposed project will use a natural toe-wood/living shoreline design to prevent sedimentation smothering for mussel habitat and support water quality improvements for Gulf sturgeon. A similar project is planned for the Gin Hole Landings, pending final permitting approval in 2024. Eglin NRS assesses potential impacts to Gulf sturgeon from proposed mission activity and recommends conservation measures to avoid these impacts.

More information on the Gulf sturgeon and Eglin AFB's management practices can be found in Tab 8—Threatened and Endangered Species Component Plan.

Bald Eagle

The bald eagle has been removed from the ESA. The FWC removed the bald eagle from the state's list of threatened species on 9 April 2008 the state simultaneously passed an eagle-specific rule [Section 68A-16.002, Florida Administrative Code—Bald Eagle (*Haliaeetus leucocephalus*)] to maintain the recovered status of the species (FWC 2012). It still receives federal protection under the BGEPA and the MBTA. In recent years, Eglin AFB has documented multiple pairs of eagles nesting on USAF property, both at CSB and on the main Eglin Reservation.

During bald eagle nesting season, NR monitors known nests once a week. Volunteers and USGS sea turtle personnel assist with monitoring the CSB bald eagle nest. Eglin AFB currently follows the USFWS guidelines for protection of bald eagles and their nest sites. A 330-foot buffer is posted and observed during the nesting season in accordance with the National Bald Eagle Management Guidelines (USFWS 2007). These guidelines are based on the use of a primary (330-foot) and a secondary (660-foot) protection zone. Certain activities are prohibited in each zone year-round and others only during the nesting season. Most

activities are restricted within the primary zone during the nesting season. If required, NR posts a protection zone following BGEPA Guidelines.

Piping Plover and Piping Plover Critical Habitat

The piping plover is a federally threatened shorebird that is present at Eglin AFB during its non-breeding season. Piping plovers prefer sandy beaches and tidal flats along both of Florida's coasts. Piping plovers found in Florida are usually wintering in the state or stopping over during migration. CH for non-breeding piping plovers was designated in 2001. Eglin AFB has marked off an additional protected area on the northern shore near Test Area A-13B (Figure 2-26). Non-breeding (wintering and migrating) piping plover season is July 15 through May 15. The boundaries of CH are subject to change due to the changing morphology of the shoreline at SRI and CSB. Guidelines published in the Federal Register should be referenced if there is any question regarding boundaries. Eglin AFB has posted designated piping plover CH at SRI and CSB. Designated CH at SRI was recently determined (via global positioning system) by the USFWS and NR, and the boundary was marked with signs. Posted signs at CSB designate "Endangered Species Habitat" and are designed to prevent driving landward of the signs, thus protecting plovers from vehicle impacts.

Eglin NRS conducts shorebird monitoring at established census points on SRI once a month from July to May. The monitoring plan includes surveys monthly for piping plovers from July 15 through May 15. In addition, NR will continue to participate in the International Piping Plover survey which occurs every five years. More information on the piping plover and the general shorebird monitoring protocol can be found in the —Threatened and Endangered Species Component Plan.

Eglin AFB's management for the piping plover consists of maintaining suitable habitat for the species. CH has been posted with "Keep Out—Endangered Species" signs on SRI and at CSB. The impacts of beach recreation, including operation of full-size vehicles on the beach at CSB, are a concern that is currently and addressed in the current Real Estate Right of Entry with Gulf County. Monthly shorebird surveys are conducted by Florida Audubon staff. Survey results are provided to Eglin AFB and the USFWS.

Eastern Indigo Snake

The Eastern indigo snake is a federally threatened species. The eastern indigo is a very large, conspicuous, slow-moving and docile snake that can attain a body length of 8.5 feet. These characteristics make it an easy target for those who indiscriminately kill snakes on sight. It is also a species that is highly sought after by collectors in the commercial pet industry. Indigo snakes have been documented at 17 sites across the Eglin Reservation. These observations are only incidental sightings and do not correspond to the range on Eglin AFB. The indigo snake use sandhills during the winter months and frequently use gopher tortoise burrows and the burrows of other species for over-wintering. Riparian areas are frequently used in the summer.

Eglin NRS primarily conducts passive management for the indigo snake by maintaining suitable habitat conditions. This includes the use of prescribed fire over large portions of Eglin AFB's sandhills. The permanent closure of forest roads and the use of perimeter access controls will benefit indigo snakes by reducing the frequency of road-kills. In 2008, Eglin NRS received a BO for Air Force activities that may potentially affect the indigo snake. Eglin NRS implements the terms and conditions from this BO including briefing proponents and construction personnel, providing signs for protection, and contact information if they have a sighting. The management and recovery of the Eastern indigo snake is closely linked to the gopher tortoise. Management activities that benefit gopher tortoises will likely benefit the indigo snake as well. Currently a plan is in place for surveying and monitoring the gopher tortoise population on Eglin

AFB. In conjunction with this, burrows will be inspected with the use of a burrow camera to obtain more information on over-wintering indigo snakes. For more information, see Tab 8—Threatened and Endangered Species Component Plan.

St. Andrew Beach Mouse

The St. Andrew beach mouse (*Peromyscus polionotus peninsularis*) is federally endangered and inhabits areas north of CSB on the St. Joseph peninsula, but its presence has not been confirmed on Eglin AFB property at CSB. Habitat loss from storms and human disturbance may have contributed to the decline of beach mice, since they like well-developed dunes with sea oat vegetation and higher back dunes with live oak and rosemary. Even though the St. Andrew beach mouse is not found within the boundaries of Eglin AFB, Eglin AFB will continue to protect the types of habitats used by the beach mouse. A number of protection measures for other species at CSB would benefit the beach mouse, including posting of dune habitats, invasive plant species control, and coastal predator control. Additionally, since the Eglin AFB property at CSB is within the historic home range of the St. Andrew beach mouse, Eglin AFB is open to discussions on possible future translocations of beach mice.

Gopher Tortoise

The 12-month finding on a petition to list the gopher tortoise as threatened in the eastern portion of its range was documented in the Federal Register in July 2011 (USFWS 2011a). The review found that the listing of the gopher tortoise was warranted; however, listing was precluded by higher priority actions. In 2020, the USFWS issued a Federal Register notice announcing that the gopher tortoise is a candidate for the federal list and a proposed rule to list the gopher tortoise will be developed as priorities allow. A final listing determination is anticipated sometime in calendar year 2023. In December 2008, all DoD entities, including the Air Force, as well as state agencies and other non-governmental organizations, signed a Candidate Conservation Agreement with the USFWS. This agreement defines what each agency will voluntarily do to conserve the gopher tortoise and its habitat.

The gopher tortoise was originally listed as a state species of special concern but was reclassified as threatened in 2008. High-quality tortoise habitat can be maintained by prescribed fire and/or application of herbicides when scrub oaks shade out the ground cover eaten by the tortoise. Gopher tortoise burrows serve as important habitat for many species, including the federally endangered eastern indigo snake. Gopher tortoise burrows are easily damaged by ground disturbance, especially from heavy equipment, as they can cave in due to ground instability. The Eglin NRS or their designee surveys all areas where proposed construction projects or military testing will remove gopher tortoise habitat. Eglin NRS maintains relocations areas as needed for relocating tortoises, indigo snakes, and other commensals from on-site project areas to support Eglin AFB activities. The Eglin NRS is working with range management personnel toward the use of more prescribed fire as opposed to roller chopping for woody species control on cleared test areas, which is very damaging to tortoise habitat.

There are no discernable patterns to the distribution of gopher tortoises on Eglin AFB, making it difficult to establish population estimates. Currently, surveys are conducted as needed for specific projects, along with annual monitoring and updates of the status of 20 percent of known tortoise burrows from previous surveys. NR is preparing for the federal listing of the gopher tortoise by conducting low-intensity monitoring of known populations, as well as surveying for new populations. Detailed information on Eglin AFB's gopher tortoise management goals, objectives and strategies can be found in Tab 8—Threatened and Endangered Species Component Plan. Eglin AFB recently completed a programmatic conference assessment with the USFWS to assess potential impacts to the species from military testing, training, construction, maintenance and natural resource management activities. A USFWS signed conference

opinion was received by Eglin AFB in early calendar year 2020. For more information, see Tab 8—Threatened and Endangered Species Component Plan.

Freshwater Mussels

Four species of freshwater mussels with habitat ranges that border Eglin AFB are listed as federally threatened or endangered—the southern sandshell, Choctaw bean, fuzzy pigtoe, and the narrow pigtoe. The majority of the range of mussel habitat overlaps Gulf sturgeon CH in the Yellow River from Highway 87 to the Shoal River at Highway 85. Because the CH for the listed mussels overlaps with CH for Gulf Sturgeon, many of the erosion control projects Eglin AFB has initiated in the Yellow River watershed for Gulf sturgeon also provide better habitat for freshwater mussels. Tab 8—Threatened and Endangered Species Component Plan identifies species level management to ensure the continued existence of these species in the Yellow and Shoal Rivers.

Red Knot

The red knot is a federally threatened species that occurs fairly regularly but in small numbers at CSB during migration and has been seen at SRI as well. Florida Audubon personnel are conducting monthly surveys to track red knots as well as piping plover trends at CSB. All sightings of red knots are marked using a global positioning system (GPS) unit. In the past, shorebird surveys were conducted monthly by a volunteer, and red knot locations were notedal historic data have not gone back very far, and data was not always submitted to Eglin NRS. The red knot has also been documented on SRI.

Habitat requirements for the red knot are similar to the piping plover and management actions in place for the piping plover also benefit the red knot. The red knot is present during similar time periods as the piping plover. Eglin AFB's management for the piping plover consists primarily of maintaining suitable habitat. Eglin AFB will continue to protect piping plovers and red knots by maintaining the posted signs and trapping predators that may harm shorebirds. All areas above the first vegetation line are posted with "Endangered Species—Keep Out" signs. This includes the CSB, where there are several ephemeral tidal pools. Public access control measures are surveyed on an annual basis at CSB and reestablished as necessary to protect the habitat (including piping plover CH).

The impacts of beach recreation at CSB, including operation of full-size vehicles on the beach, are currently being addressed in partnership with Gulf County. Eglin NRS has developed educational brochures concerning the protection of beach species such as the piping plover and other unique barrier island natural resources to provide to local communities at beach access points. In addition, beach raking is not allowed on any Eglin AFB property, so the wrack line remains intact as a foraging substrate.

Tab 8—Threatened and Endangered Species Component Plan identifies additional protection measures that are currently in place for other species, which also protect the red knot and its habitat.

Migratory Birds

A migratory bird is defined by the USFWS as any species or family of birds that lives, reproduces, or migrates within or across international borders at some point during their annual life cycle. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird. The prohibitions apply to any migratory bird, part, nest, egg, and any manufactured or non-manufactured product that is composed, in whole or in part, of any such bird,

part, nest, or egg. It is also unlawful to knowingly take any migratory game bird by baiting an area. The Act makes it unlawful to ship, transport, or carry from one state, territory, or district to another, or through a foreign country, any migratory bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws of the area from where it was obtained. Further, it is unlawful to import from Canada any migratory bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The Secretary of the Interior (Secretary) is given authority to carry out the provisions of the MBTA.

Department of the Interior employees authorized to enforce the MBTA may, without a warrant, arrest a person violating the MBTA in the employee's view, may execute a warrant or other process issued by an officer or court to enforce the MBTA, and may search any place with a warrant. All birds, parts, nests, or eggs that are captured, killed, taken, sold, bartered, purchased, shipped, transported, carried, imported, exported, or possessed contrary to the MBTA must be seized and, upon conviction of the offender or the judgment of a court, be forfeited to the U.S. and disposed of by the Secretary.

Executive Order 13186—Responsibilities of Federal Agencies to Protect Migratory Birds

EO 13186 is intended to further the implementation of the MBTA, ESA, and NEPA. Under EO 13186, federal agencies are required within permitted law, availability of monies, budgetary limits, and agency missions to

- support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities, and by avoiding or minimizing adverse impacts on migratory bird resources;
- prevent or abate pollution or detrimental alteration of the environment for the benefit of migratory birds;
- design migratory bird habitat and population conservation principles, measures, and practices into agency plans and planning processes, and coordinate with other agencies and nonfederal partners in planning efforts;
- provide notice to the USFWS in advance of conducting an action that is intended to take migratory birds;
- minimize the intentional take of species of concern; and
- identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations.

Effects of Military Activities on Migratory Birds

Eglin NRS reviews military activities for migratory bird concerns through the NEPA process as well as through the Air Force Form 813 review process. During this process, NR requires implementation of any available guidelines that might protect bird species, such as the USFWS cell tower guidelines. Eglin NRS minimizes potential impacts to migratory birds when necessary, through surveys or avoidance of the breeding season. If a military mission will knowingly result in the take of bird species and take cannot be avoided, NR consults with the USFWS and develops a mitigation plan. To protect migratory bird species, Eglin NRS has conducted the following types of surveys/mitigation measures for military activities.

- Migratory bird surveys prior to removal of trees (dependent on time of year)
- Screening of inactive RCW trees to ensure migratory birds do not occupy these trees prior to removal
- Recommend use of nesting deterrents on communications towers or other Eglin AFB range infrastructure where nesting is incompatible with mission
- Conduct roof surveys for least tern colonies

- Attempt to attract and establish least tern colony on vacant/unused buildings on SRI
- Missions on SRI require a pre- and post-mission survey prior to conducting activities; nests are marked and avoided

Protective Measures

Eglin NRS has developed and implemented the following protective measures for priority migratory bird species (additional information can be found in Tab 8—Threatened and Endangered Species Component Plan). In addition, Eglin NRS participates in annual bird count surveys requested by FWC and USFWS.

Shorebirds

Eglin NRS conducts monthly shorebird surveys from mid-July to mid-May on Eglin SRI property. Additionally, nesting surveys are conducted weekly from March through July. If nesting colonies or individual nests are determined to be in danger of being disturbed or destroyed, then the area is posted with "Keep Out—Endangered Species" signs or "Shorebird Nesting Area" signs.

Eglin AFB's management for the piping plover and other listed shorebirds has consisted primarily of maintaining suitable habitat for the species and conducting surveys. Eglin AFB has posted designated piping plover CH; no mission activities are allowed within the designated area.

Beginning in 2008, Eglin NRS conducted an annual snowy plover banding project on SRI (March–August). This species is state threatened and has the potential to become federally listed in the near future. During the breeding seasons, weekly surveys were conducted to find all snowy plover nests on Eglin AFB's beaches. All nests found were recorded by GPS and monitored until hatching when the chicks were banded (some unbanded adults were captured as well). During nesting surveys, the location of all observed banded birds was recorded. These data may be used to generate maps showing nesting and foraging locations of all banded birds. Hatchling survival rate may also be estimated. With the exception of banding chicks, weekly nest surveys during the breeding season continue each year on SRI.

Florida Audubon personnel conduct weekly shorebird surveys on USAF property. Florida Audubon personnel are currently collecting GPS data for the red knot. The red knot's protective measures mimic those of the piping plover.

Burrowing Owl

Florida burrowing owl surveys are conducted in conjunction with gopher tortoise surveys to de-conflict mission impacts, as needed. Due to similarities in appearances, burrowing owl burrows receive the same level of protection and impact minimization measures as gopher tortoise burrows.

Osprey

Ospreys (*Pandion haliaetus*) do not have federal or state protection but are a rare species tracked by FNAI. They may construct nests on Eglin AFB range infrastructure (particularly communications towers) and other assets. Eglin NRS coordinates with 96 TW proponents to make every effort to dismantle and remove nests outside osprey nesting phenology. When mission proponents require nest removal as a military readiness measure, Eglin NRS then coordinates immediately with USFWS for the disposition of eggs or nestlings via wildlife rehabilitators as recommended by USFWS.

7.4.1.4 Using the INRMP to Avoid Critical Habitat Listings on Eglin Air Force Base

Pursuant to Title 16, U.S.C., Section 1533((1)(3)(B)(i)), the Secretary of Interior ". . . shall not designate as CH 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 Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which CH is proposed for designation."

This INRMP and Tab 8—Threatened and Endangered Species Component Plan are meant to serve as the substitute for CH designation under the ESA special management criteria. In order for this to occur, the plan must provide a conservation benefit to the species; the plan must provide certainty that the management plan will be implemented; and the plan must provide certainty that the conservation effort will be effective. Eglin AFB's INRMP and Tab 8—Threatened and Endangered Species Component Plan clearly show how management actions adequately protect and benefit species, thus should preclude any CH designation on the Eglin AFB range.

Recent federal listing of the red knot and multiple freshwater mussel species, as well as the designation of the gopher tortoise as a candidate species, required NR managers to closely examine the INRMP to ensure it would meet the requirements for exemption. Location data collected by CSB personnel on the red knot were helpful in precluding the listing of CH on Air Force property. Red knot monitoring efforts and measures to protect habitats used by red knots were also important factors in the exemption. Although Eglin AFB owns much of the land adjacent to the mussel CH designation (specifically unit GCM5, Yellow River Drainage) along the lower portions of the Shoal and Yellow Rivers, no portions of stream or river channels designated as CH occur within the boundary of the military reservation. Because Eglin AFB only borders the CH, no exemption was possible. In advance of potential listing of the gopher tortoise, Eglin AFB has been taking actions to increase its population in hopes that listing can be avoided. Activities include the translocation of tortoises from off-site, monitoring, and continued management of longleaf pine habitats with prescribed fire.

The *Draft Flatwoods Salamander Recovery Plan* did not designate RFS CH on Eglin AFB because Eglin AFB's detailed management protects and benefits the species as described in this INRMP and Tab 8—Threatened and Endangered Species Component Plan. Eglin AFB was also exempted from CH listing for the loggerhead sea turtle due to the management actions detailed in the INRMP, which will provide a benefit to the species. Annual updates to the INRMP will address the steps taken (i.e., development of a lighting plan, prescribed fire) that benefit the loggerhead and RFS.

7.4.1.5 Management of State Protected and Rare Species

Management operations conducted by NR for many of the federally protected species and for the health of the ecosystem in general provide direct and indirect benefits to state protected and rare species. This is one of the benefits of Eglin AFB's ecosystem-based management program. For example, the proper management of Eglin AFB's sandhill ecosystem, which includes reintroduction of prescribed fire, conversion of off-site pine species (sand or slash pine planted in place of harvested longleaf pine for commercial forestry purposes) to longleaf pine, retention of an old growth longleaf pine component, protection of ground cover plant species, closure of unnecessary forest roads, control of INS, and erosion control will benefit multiple state protected species including the pine barrens treefrog (*Hyla andersonii*), gopher frog (*Lithobates capito;* under review for federal listing) Florida bog frog, gopher tortoise, and Florida pine snake. Management for a specific species can also benefit other species as well. Management efforts that benefit the RCW also benefit the Southeastern American kestrel (*Falco sparverius paulus;* state threatened), gopher tortoise, Bachman's sparrow (*Peucaea aestivalis*), and a wide variety of plants on Eglin AFB.

Although species specific management is not conducted for the majority of the state protected species on Eglin AFB, certain species do warrant special consideration, such as those that are also federal candidates

or petitioned for protection, and those undergoing species status assessments. Monitoring programs exist for the Santa Rosa beach mouse, Florida bog frog, and multiple shorebird species. NR also marks known Florida burrowing owl (*Athene cunicularia floridana;* state threatened) burrows with a "T" perch with reflective tape, and annually coordinates the perches with range mowing teams. NR promotes education on the Florida black bear (*Ursus americanus floridanus;* removed from the state Endangered and Threatened Species list in 2012), assists with black bear issues across the base, and maintains a database of all documented incidental sighting, nuisance/injured bears, and road kills. Specific information on the monitoring and management of these species can be found in Tab 8—Threatened and Endangered Species Component Plan.

A 2010 Center for Biological Diversity petition to the USFWS has prompted the consideration of over 400 freshwater species in the southeastern U.S. (32 of which may occur on Eglin AFB) for protection under the ESA (USFWS 2011b). Eglin AFB is working with the USFWS and other partners to determine potential ways to avoid federal listing of additional species and the associated regulatory burden and is exploring options to minimize or eliminate threats to the proposed candidate species. In many cases, the DoD already has protective measures in place for many of these rare species.

Three new species of salamanders, two in the *Eurycea quadridigitata* complex and one in the *Desmognathus* complex, were discovered on Eglin AFB since 1994. *Sminthurus floridanus*, a small arthropod previously thought extinct, was rediscovered on Eglin AFB. A new *Sminthurus* species and a new family of wasps were also discovered. Tab 8—Threatened and Endangered Species Component Plan contains a list of all known endangered, threatened, or rare species located on Eglin AFB, and includes additional information on the monitoring and management of certain state-listed species of particular concern.

Rare Bat Species

The tricolored bat (*Perimyotis subflavus*), formerly known as the eastern pipistrelle, was historically one of the most common species found throughout the forests of eastern North and Central America. Tricolored bats are under review for federal listing. This species has declined precipitously due in large part to white-nose syndrome (*Pseudogymnoascus destructans*), the fungus affecting many bat species in the northeastern U.S. This species typically relies on forests for foraging and summer roosting but can be found winter roosting in human structures such as bridges and culverts when cave systems are scarce or unavailable on the landscape. DoD has a MOU with Bat Conservation International (signed October 2006, renewed December 2011) that ". . . establishes a policy of cooperation and coordination between DoD and Bat Conservation International to identify, document and maintain bat populations and their habitats on DoD installations." Additionally, the MOU expresses DoD interest in improving management of bat populations and habitats, particularly to keep once-common bat species from being federally listed and to recover presently listed species and prevent extinctions. The neighboring installation at Hurlburt Field initiated winter-roosting occupancy surveys for tri-colored bats in 2019 using a mix of acoustic detectors to record calls for identification, and infrared video imagery to assess populations occupying bridges and culverts on base. Hurlburt and Eglin NRSs are also considering implementing the North American Bat Monitoring Survey across both bases to monitor long-term population trends on the installations and contribute to the larger project monitoring trends across North America.

Pollinator Species

The Monarch butterfly (*Danaus plexippus*) is a candidate species under ESA, as populations have undergone substantial declines due to factors such as habitat loss on breeding and overwintering grounds (USFWS 2017b). Each spring, monarchs migrate from Mexico and California to breed and lay eggs on

milkweed plants across North America. Although most populations migrate back to overwintering sites in late summer and early fall, South Florida hosts small year-round resident populations. As such, Eglin AFB is along the migration route for monarchs that are either headed to Mexico or end up staying year-round in the Southern part of the state (Harvey et al. 2012). The best way to support monarch butterfly populations is by providing native milkweeds and other nectar-rich flowers that bloom during the monarch migration. Eglin AFB hosts diverse flowering plants along roadsides and other open areas of the installation, and additional work to provide monarch habitat should reference regional guides such as those available through the Xerces Society (https://xerces.org/publications/plant-lists/monarch-nectar-plants-florida).

The Gulf Coast solitary bee (*Hesperapis oraria)* is under review for listing as of 2019. This bee is typically found on dunes on barrier islands and coastal shores where it can find its floral host, Coastal Plain honeycombhead (*Balduina angustifolia*), as well as its preferred nesting habitat of deep, soft, sandy soils within flight range of the plants (USFWS 2020). Although no surveys have been conducted for the species, it is known to occur in Okaloosa County.

7.4.1.6 High-Quality Natural Communities, Significant Botanical Sites, and Outstanding Natural Areas

ONAs, SBSs, and High-Quality Natural Communities support many rare and protected species and are essential for long-term ecological research and as reference conditions for restoration actions on the base. Therefore, these areas and communities must be specifically accounted for in any proposed management activity. The focus of management in these areas will be the maintenance of natural processes, such as the fire regime, and abatement of specific threats, such as invasive species (e.g., sand pine and cogon grass). In very select cases, and with consensus among all strategic and operational planners within NR, some mechanical methods of longleaf pine removal may be planned. Longleaf pine removal would only be used, however, to restore the natural overstory structure to conditions optimal for longleaf pine regeneration and understory species richness. The ecological qualities of these areas require that management be carried out with a higher level of scrutiny, especially with regard to the high- quality herbaceous ground cover and high density of rare species.

Eglin's NR has developed general management and restoration guidelines and an internal process to review management actions that need a multi-disciplinary assessment. General management suggestions for each community type are presented in the Eglin AFB *Natural Community Survey Final Report* (FNAI 1997). More specific guidelines relating to each community's management are being developed by Eglin's NR staff to be incorporated into pertinent CPs. When management actions not covered in the general guidelines are proposed in any High-Quality Natural Community, SBS, or ONA, appropriate personnel from each area of expertise within NR will review the proposed actions and make recommendations. Additionally, the same process will be followed for any operations in the vicinity of unique wetland communities such as seepage slopes, steepheads, and depression marshes. Any management that occurs in areas outside the High-Quality Natural Communities, SBSs, ONAs, and sensitive wetland communities will continue to undergo the standard review process (such as circulating maps of proposed actions to appropriate NR personnel for review).

7.4.2 Climate Impacts on Threatened and Endangered Species Management

Management actions needed to conserve and recover protected species under a changing climate will depend on the speed at which the climate changes, the nature of the climatic changes, and the ability of the species to respond to those changes. Our understanding of species' response to a changing climate is not yet sufficient for predicting how most individual species will respond. In addition, the response of sub-populations of a single species may vary, as species can exhibit adaptive responses to environmental

conditions. For example, behavioral changes, such as hostplant or food source switching, have already been observed (Ozgul et al. 2010, Iwamura et al. 2013). Other populations have exhibited physical adaptations over time, such as changes in body size associated with longer growing seasons. Genetic variation within a species has been associated with exposure to changing environmental conditions in the past, but populations may not be able to undergo selection for preferred traits if environmental conditions change too rapidly (Hoffmann and Sgrò 2011).

Many current rare and protected species management activities in place at Eglin AFB are appropriate for increasing resilience or facilitating adaptation to climate change, and extensive species-specific monitoring programs are underway that will allow analysis of climate change effects as they occur. An ecosystem approach that prioritizes functional diversity, habitat maintenance, habitat variability, and habitat connectivity can help support the genetic diversity that may be important for adaptation and/or migration to more favorable habitats; however, when approaching the uncertainty that is inherent with managing species under changing environmental conditions, additional analysis and planning is required.

Historic patterns used for management decisions are likely to be insufficient for future management challenges (Bierbaum et al. 2013). Instead, proactive approaches that anticipate change can help extend the period over which species can adapt to changing climate and avoid catastrophic declines associated with stochastic events that act on an already stressed ecosystem.

7.5 Water Resource Protection

Applicability Statement

This section applies to USAF installations that have water resources. This section **IS** applicable to Eglin AFB.

Program Overview/Current Management Practices

Water resources include groundwater, streams, lakes, bays, bayous, sounds, and wetlands. Multiple large water bodies are located on or adjacent to Eglin AFB, including the Yellow, Shoal, and East Bay rivers as well as East Bay, Santa Rosa Sound, Choctawhatchee Bay, Gulf of Mexico, and St. Joseph Bay. Additionally, numerous small streams and wetlands are present across the Eglin Reservation. Primary threats to these water resources are excess sedimentation, bacterial contamination, and high demand for water.

7.5.1 Regional Water Resources

7.5.1.1 Non-Point Source Pollution

The combination of steep slopes, high intensity rainstorms, and deep, sandy soils makes the Eglin AFB area especially vulnerable to accelerated erosion and sedimentation. Accelerated erosion in this region is associated primarily with poor unpaved road maintenance and building construction practices, and the removal of streamside vegetation. Excess sediment can negatively impact aquatic habitats and threaten the federally listed Okaloosa darter and Gulf sturgeon. Elevated bacteria levels can also be an issue in this area, mainly due to stormwater runoff and septic tank leakage. Multiple water bodies adjacent to Eglin AFB have been documented to have elevated bacteria levels after storm events but the source of these increased levels has not been identified. Considering the extent of urban areas around the boundary of the Reservation, a high likelihood exists that the source occurs off USAF property.

7.5.1.2 Water Supply

The Floridan and surficial aquifers supply most of the water needs in Santa Rosa, Okaloosa, and Walton Counties. In the coastal areas of these counties, there has been an excessive decline in the potentiometric surface elevation of the Floridan aquifer due to heavy groundwater pumping. This decline causes an increased risk of saltwater intrusion and may potentially impact water levels in area water bodies. Monitoring of ground water levels and changes in aquifer chemistry could provide valuable information towards understanding whether saltwater intrusion is occurring on Eglin AFB and could also support the development of any needed mitigation strategies to address this issue in the future. Due to the concern that groundwater pumping may also impact surface water levels, there may be a need to develop monitoring protocols to detect changes and further evaluate the effects of groundwater declines on surface water resources.

7.5.1.3 Water-Quality Monitoring

Water-quality sampling of non-potable waters on the Eglin Reservation is conducted primarily by Eglin-based USFWS biologists. Basic water chemistry (dissolved oxygen, turbidity, temperature, potential for hydrogen [pH], and conductivity) and stream velocity are collected as part of invertebrate and fish collections and assessments at multiple sites across the mainland Reservation.

Regionally, FDEP and the Choctawhatchee Basin Alliance (CBA) also sample water quality. The CBA water-quality monitoring sites are located in multiple water bodies adjacent to Eglin AFB, including Santa Rosa Sound, Choctawhatchee Bay, Garniers Bayou, and Rocky Bayou. Parameters measured include temperature, salinity, pH, dissolved oxygen, water clarity, nutrient concentrations (total nitrogen and phosphorus), and algae content (chlorophyll).

7.5.1.4 Eglin Air Force Base Stormwater and Wastewater Management

The 96th Civil Engineer Group (96 CEG/CEOUUP) manages, operates, and maintains Eglin AFB's one wastewater treatment plant (WWTP) located at C-6 and the 96 CEG/CEIEC manages the associated WWTP permit and related compliance requirements, in accordance with applicable USAF regulations. Main Base and Duke Field WWTP influent was permanently diverted to the Arbennie Pritchett WWTP operated by Okaloosa County in 2014 and Field 6 WWTP influent was similarly diverted in 2016.

The 96 CEG/CEIEC processes all applications for stormwater permits. Stormwater permits consider issues associated with the increased volume and velocity of stormwater runoff and identify methods to reduce the potential for negative impacts to water resources from these activities.

7.5.1.5 Eglin Air Force Base Erosion Control Program

On Eglin AFB, the main non-point source pollutant is excess sediment from unpaved roads, borrow pits, utility right-of-ways, and cleared test ranges. For over a decade, Eglin AFB has been actively pursuing erosion control projects to address this problem. Eglin AFB has received numerous awards recognizing its erosion control efforts, including the 2001 Environmental Grand Achievement from the International Erosion Control Association’s and the President’s Fishery Conservation Award from the American Fisheries Society.

Restoration projects focus on the use of earthen berms, road closure, and revegetation to reduce the flow of sediment. As of 2013, NR had restored more than 1,050 acres at over 750 sites (borrow pits and nonpoint erosional sites) for erosion control on Eglin AFB, with a reduction in soil loss of 117,500 tons per acre annually. Eglin AFB contracted with the USACE (1993 to 1995), and the NRCS Three Rivers Resource

Conservation and Development (TRRCD) (1996 to present) to rehabilitate borrow pits and nonpoint erosion sites using approved, engineer-designed drainage basin structures, earthen berms, native vegetation, and other erosion control methods (i.e., geoweb aggregate road surfaces). TRRCD responsibilities included site surveying, design work, site inspection, and contract administration. Projects typically require stormwater construction permits (Environmental Resources Permit and National Pollutant Discharge Elimination System [NPDES]), a dredge and fill permit, and a stormwater pollution prevention plan. The 4d rule for the Okaloosa darter (described in the Okaloosa darter section) authorizes incidental take for NR erosion control projects.

These projects initially focused on Choctawhatchee basin watersheds to address threats to the federally endangered Okaloosa darter. Recent efforts focus more resources on the Yellow River basin which contains CH for the federally threatened Gulf sturgeon and four protected mussel species. Annual site maintenance is conducted an all erosion sites until they are stabilized (generally three to five years). Project development and implementation, techniques, maintenance, and future work are detailed in Tab 10—Erosion Control Component Plan.

7.5.1.6 Eglin USFWS Aquatic Program

The USFWS Fisheries Resources Program (USFWS-FR) is the primary entity for aquatic investigations of fishery resources on Eglin AFB. The goal of the USFWS FR partnership with Eglin AFB is to provide technical assistance for monitoring and adaptive management of rivers and streams and protection of imperiled aquatic species. Biological, chemical, and physical survey data are collected to improve understanding of stream system function, resilience, and response to stressors as well as species sensitivity to watershed level activities. Details on this program are available in Tab 9—Ecological Monitoring Component Plan.

7.5.1.7 Cooperative Programs

Eglin AFB works with several groups that address regional water resource issues, including the CBA. The CBA is a non-profit citizens group that works to protect and restore the waters in the Choctawhatchee basin. Erosion control and aquatic restoration projects on Eglin AFB have also involved multiple partners. Cooperative projects have been conducted with the CBA, Northwest Florida Aquatic Preserves, TRRCD, NRCS, and the GCPEP. Projects have included activities such as streamside vegetation planting, construction of earthen berms, and seagrass planting.

7.6 Wetland Protection

Applicability Statement

This section applies to USAF installations that have existing wetlands on USAF property. This section **IS** applicable to Eglin AFB.

Program Overview/Current Management Practices

In an effort to protect important wetland resources, a number of federal, state, and Air Force regulations have been instituted, including the CWA and EO 11990 (Appendix A). The 96 CEG/CEIEC is responsible for processing wetland/dredge and fill permits. Eglin AFB uses the National Wetland Inventory for initial planning purposes, and wetland delineations are conducted as needed for projects, primarily for road or building development.

For activities that do not require permits, the primary concern is to limit ground-disturbing activities within and near wetlands, as the condition and water quality of the majority of wetlands on Eglin AFB are good.

Eglin NRS supports this effort by disseminating information on activity restrictions near wetlands to range users and construction personnel through briefings of RSOPs and pre-mission and pre-construction briefings. Additionally, NR created the Mainland Environmental Guidebook and SRI Environmental Guidebook, in addition to writing the Natural Resources portions of the EAFBI 13-212 and UEC Handbook, all of which cover wetland protection measures, including the following.

- No off-road driving, digging, bivouac, cutting vegetation, and other ground-disturbing activities within 100 feet of any wetland.
- Direct release of chemicals or metals into wetlands is prohibited.

Eglin NRS manages certain wetlands through the prescribed burning program, which helps to minimize hardwood encroachment, through erosion control projects to minimize excess sedimentation, and by erecting access control structures to minimize off-road driving. Wetlands in the East Bay Flatwoods which are known to be home to the federally endangered RFS are frequently burned and hardwood and invasive species removal projects are conducted on an as-needed basis. Off-road driving by the public is an issue in this area; access restriction options are currently under consideration to prevent damage to these sensitive wetland areas. Other wetland restoration activities include the Mill Creek and Anderson Branch projects where floodplain wetlands adjacent to the main stream have been restored.

7.6.1 Climate Impacts on Wetland Protection

Models show that wetland ecosystems could be particularly vulnerable to warmer temperatures (Erwin 2009), which would increase evaporation rates and negatively alter the hydrological regimes of the 65,350.30 acres of wetlands present on Eglin AFB. Eglin AFB management could respond to these effects by restoring wetlands that have been invaded by non-native species and mitigating the losses of wetlands associated with construction or military activities. Sea level rise and more frequent and intense storm surges could imperil coastal wetlands in particular, particularly low-lying marshes that could be fully inundated or suffer from saltwater intrusion into fresh or brackish sites.

7.7 Grounds Maintenance

Applicability Statement

This section applies to USAF installations that perform ground maintenance activities that could impact natural resources. This section **IS** applicable to Eglin AFB.

Program Overview/Current Management Practices

The 796th Civil Engineer Squadron, Grounds Maintenance (796 CES/CEOHG) works to maintain landscaped areas with low maintenance and native species whenever possible. Types of vegetation used in landscaping are discussed in Section 2.3.2.3. The 796 CES/CEOHG also handles the management of plant diseases, insects, and non-point source pollution issues with landscape pesticides and fertilizers. They work in conjunction with the Pest Management office to decrease pests and invasive species with the use of pesticides and herbicides. Pest management is discussed in more detail in Section 7.11 Integrated Pest Management Program. Eglin NRS is also working with Golf Course Environmental Management Plan personnel on issues relating to the federally listed Okaloosa darter which is found on the Eglin Golf Course.

7.8 Forest Management

Applicability Statement

This section applies to USAF installations that maintain forested land on USAF property. This section **IS** applicable to Eglin AFB.

Program Overview/Current Management Practices

The principal focus of forest management on Eglin AFB is to support the military mission while remaining consistent with long-term ecosystem-based management goals that put ecological sustainability objectives above revenue optimization goals (see DODI 4715.03). Under the principles of ecosystem management, forest treatments may be used to achieve installation goals for forest enhancement and restoration, protected species and wildlife habitat improvement, wildfire protection, recreational development, military training requirements, airfield safety compliance, and wood protection. The Eglin Forest Management Element supports the natural resources strategic priorities listed in the beginning of Section 7.0 and in Section 8.0.

7.8.1 Land Cover Types

Due to its size, Eglin AFB is comprised of many different land cover types. The Eglin AFB Reservation consists of five main forest cover types. These cover types include natural pine, planted pine, pine and hardwood mix, upland hardwood, and bottomland hardwood. Figure 7-8 and Figure 7-9 identify the three most prevalent forest cover types.

7.8.2 Timber Management

7.8.2.1 Military Mission Support

Most forest management activities result in benefits to both the military mission and to native ecosystems. Forest Management provides direct mission support by contracting merchantable timber to be cut from areas that interfere with military mission capabilities (e.g., line-of-sight) and to clear new ranges. Activities may also include manipulating forest structure for a specific mission need or to create a security buffer, visual screen, or noise buffer. The Forest Management element responds to TW and other mission related tree removal requests by initiating coordination within five days of "notice to remove trees."

7.8.2.2 Sand Pine Removal

The primary focus of the timber management program is the removal of sand pine from the longleaf pine ecosystem within the CCA (Table 7-4). Areas for sand pine removal are selected based on priorities identified for RCW habitat improvement (Figure 7-10 and Figure 7-11) in coordination with the Wildlife and Fire sections. From the RCW habitat perspective, activities are prioritized on the east side over the west. Habitat management activities seek to restore recruitment hubs before other sites. Threat abatement activities within the CCA are focused first within 0.5 mile of active RCW clusters, then addressed within one mile of active clusters, and finally, addressed within the remainder of CCA. This concentric strategy should ensure that management progress made in the short-term is not undone by reinvasion of sand pine from within lower priority zones. Sand pine cuts are contracted out, but daily inspections are conducted to ensure contract compliance. RCW breeding season runs from approximately April 15 through August 15. During this period, the contract inspector will confer with the endangered species biologist before removing vegetation within 200 feet of an active RCW tree.

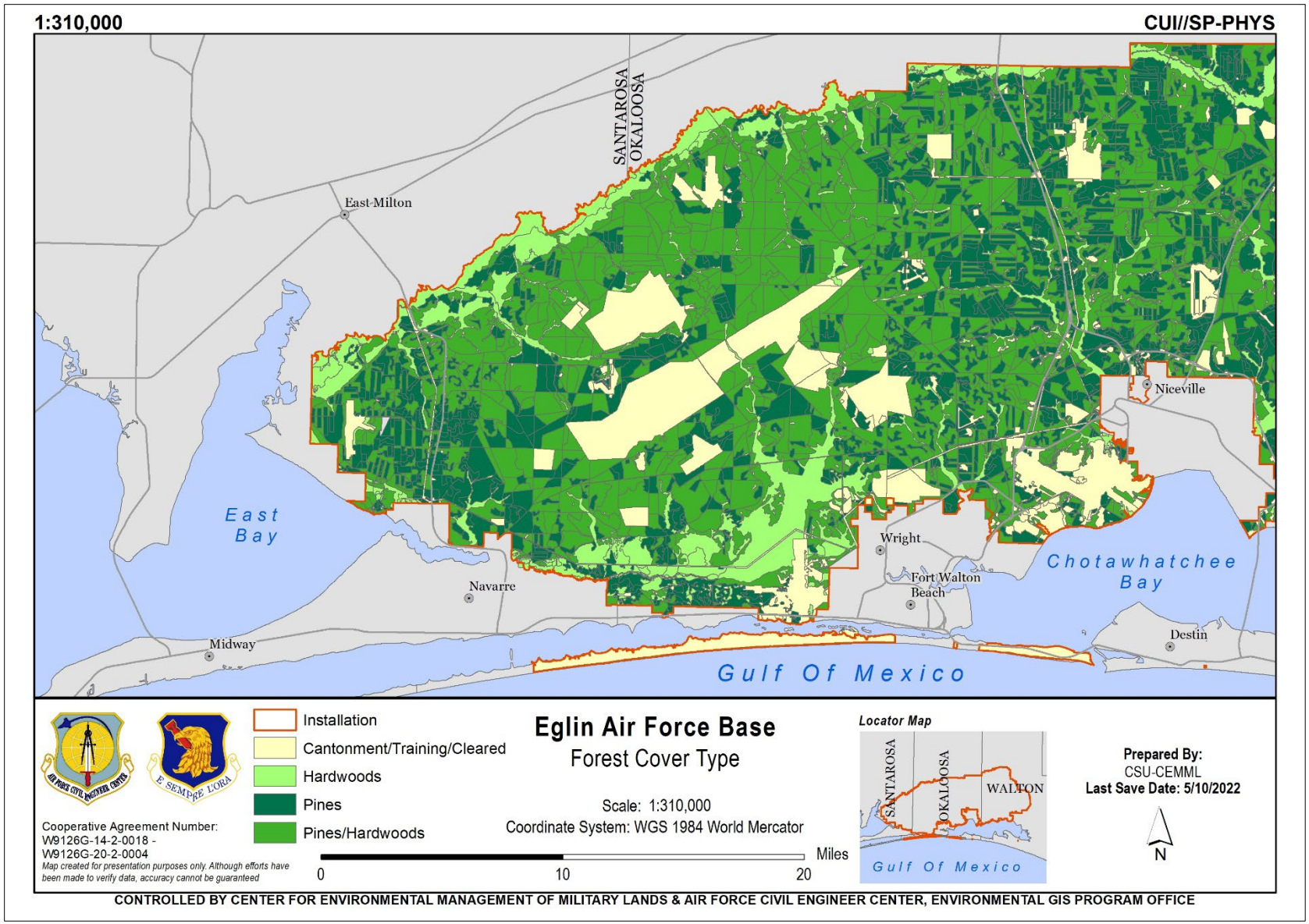

Figure 7-8. Forest cover type for Eglin Air Force Base (West).

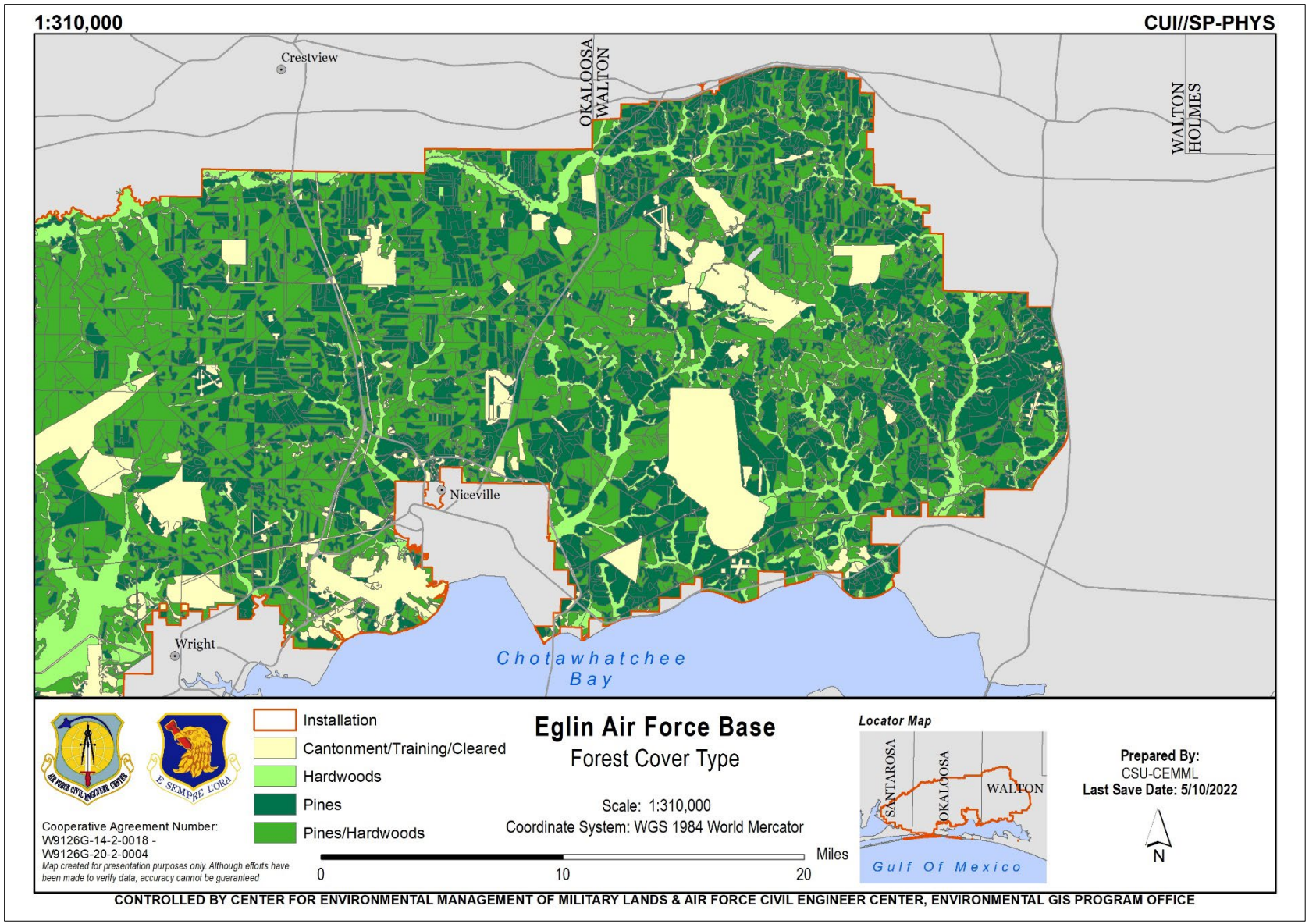

Figure 7-9. Forest cover type for Eglin Air Force Base (East).

Table 7-4. Planned timber management activities for 2022–2026.

Timber Management / Restoration Within the Core Conservation Area	Acres
Invasive sand pine removal	3,000
Sand pine plantation removal	500
Stunted slash pine plantation removal	800
Slash pine plantation thinning/conversion	325
Longleaf pine thinning	1,000
Timber Management Outside of the Core Conservation Area	**Acres**
Slash and longleaf pine thinning	2,000
Sand pine seed tree	500
Other commercial operations	1,500

7.8.2.3 Fuelwood Operations

In certain areas, both sand pine encroachment and hardwood encroachment are a threat to longleaf habitat (Figure 7-10 and Figure 7-11). When these conditions occur, fuelwood contractors may be used to mechanically remove undesirable species of all sizes. Fuelwood contractors are able to harvest hardwoods and softwoods that would not be considered merchantable during a traditional timber sale. The material removed during a fuelwood harvest is typically chipped on site and removed via chip vans. The vans then deliver the wood chips to local paper mills or sawmills where the chips are burned as a "green" fuel to generate electricity.

7.8.2.4 Off-site Slash Pine Plantations

Off-site slash pine plantations still occupy approximately 12,000 acres of potential longleaf habitat at Eglin AFB (Table 7-4). Eglin NRS has determined that these stands are not an immediate threat to RCW growth and expansion toward the RCW Mission Flexibility Goal. Some of these stands serve as potential forage or movement corridors for RCW. Slash pine plantations will not be removed within current foraging area or hubs if the removal would reduce available foraging habitat below established requirements as estimated through the RCW Foraging Habitat Assessment Tool (see Tab 8—Threatened and Endangered Species Component Plan). Where slash pine plantations occur within 0.5 mile of a recruitment cluster, Forest Management will plan timber sales in collaboration with Wildlife personnel.

7.8.2.5 Longleaf Pine Uneven-Aged Management

Forest Management will conduct all longleaf pine thinning to mimic natural disturbance, with openings of varying sizes (Table 7-4; Figure 7-10 and Figure 7-11). Longleaf pine thinning operations will be used to promote an open, multi-aged canopy structure, while still maintaining sufficient stem density to meet RCW habitat requirements. Continued coordination with the Wildlife and Fire sections will identify areas throughout the base with high densities of longleaf pine stems where thinning operations would improve RCW habitat and not conflict with other ecosystem management goals.

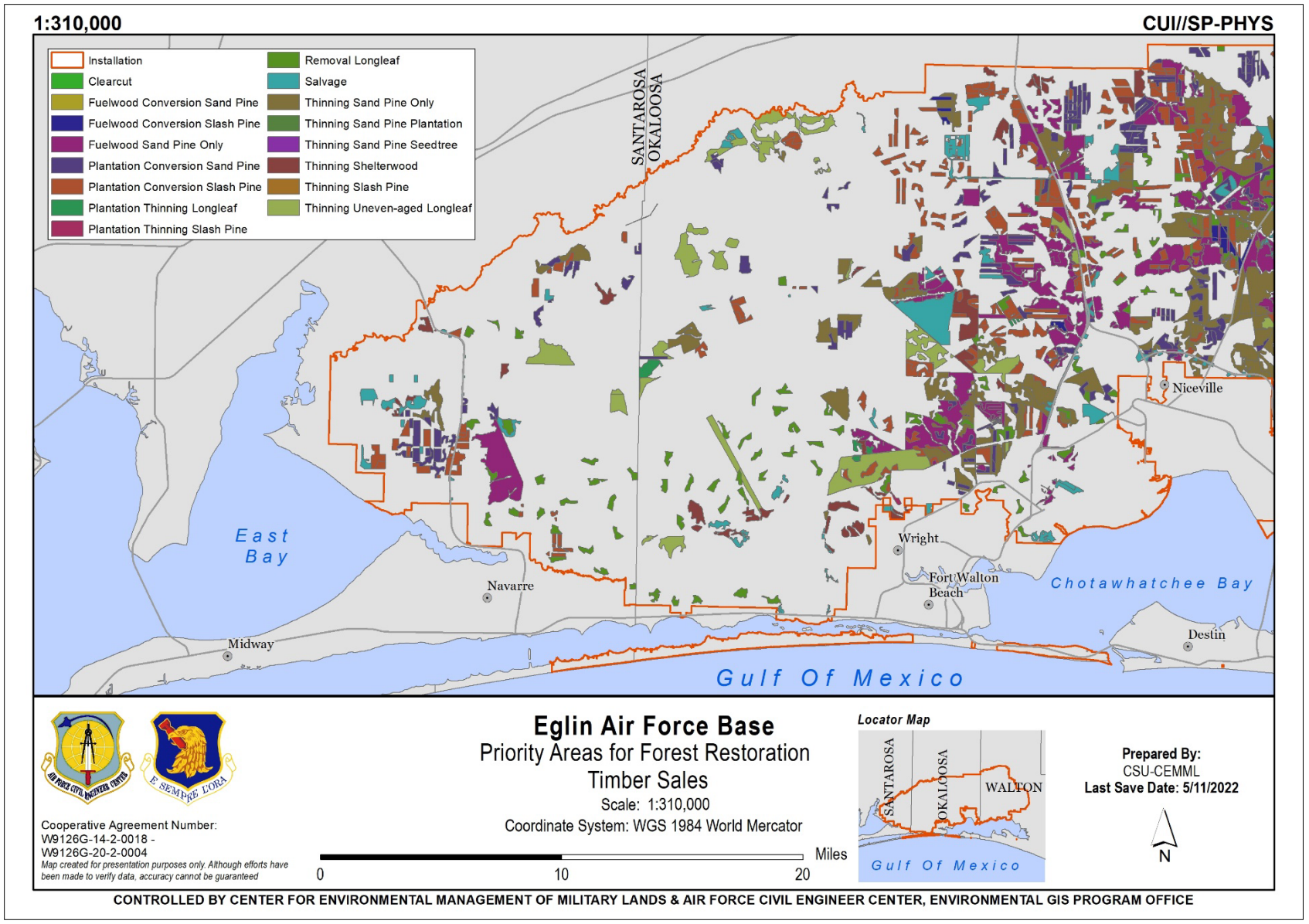

Figure 7-10. Priority Areas for forest restoration timber sales (West).

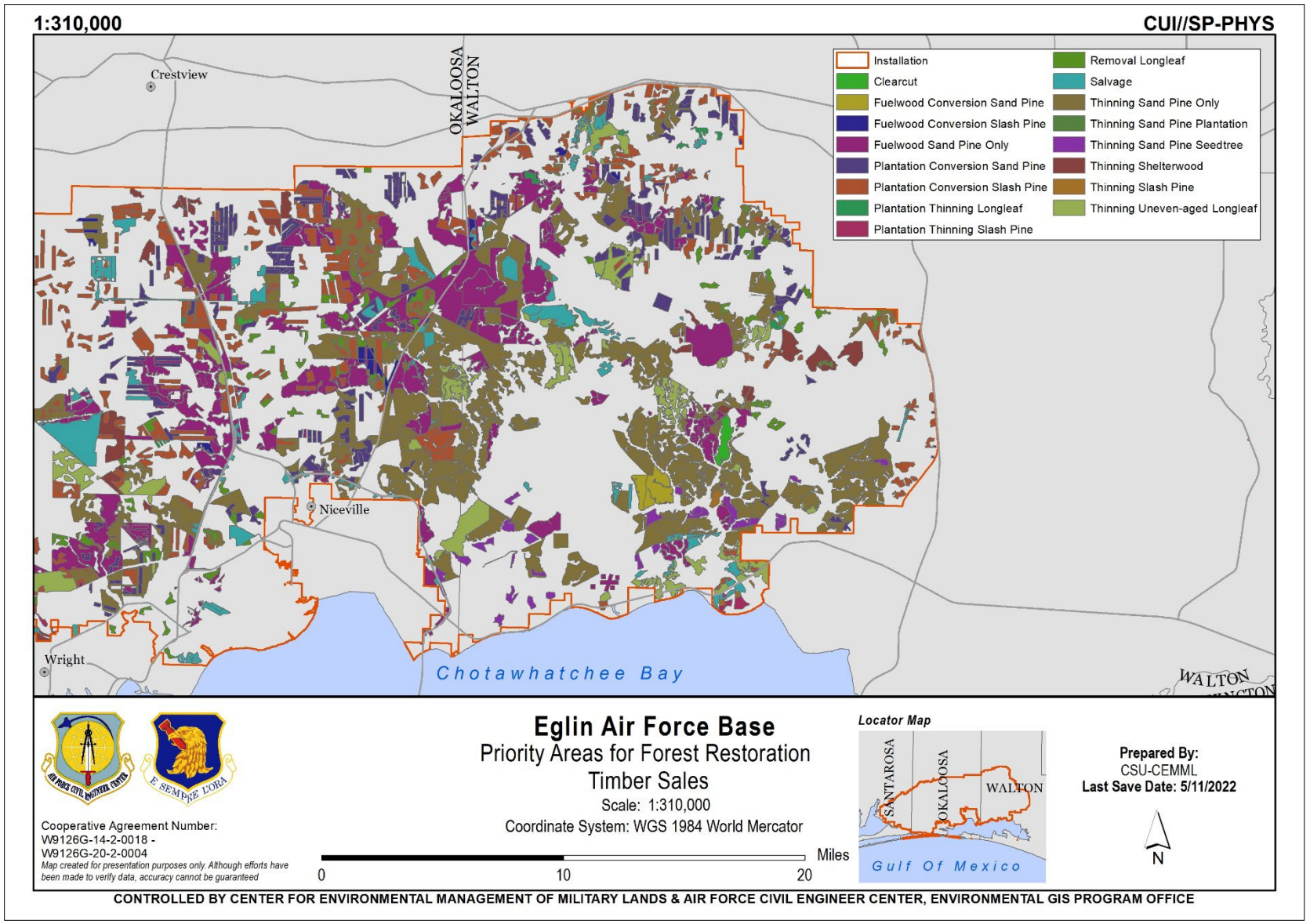

Figure 7-11. Priority Areas for forest restoration timber sales (East).

Thinning operations will maintain a 200-foot buffer around all active cavity trees during the breeding season.

Longleaf thinning may provide opportunities to further restoration objectives through revenue generation for conservation activities and sales that combine low-density sand pine with longleaf. Detailed guidelines for longleaf thinning are available in the Forest Management Plan (Tab 6—Forest Management Component Plan).

7.8.2.6 Timber Salvage

To maintain forest health, it is sometimes necessary to conduct timber salvage operations involving various quantities of unwanted/damaged trees. The majority of salvage pine trees are killed by fire, insects, or storms, cleared for construction sites or mission purposes (ranges), or cut for sand pine removal. Forest Management coordinates with the other NR elements, numerous Eglin AFB tenants, as well as organizations outside of Eglin AFB to determine areas in which a timber salvage operation is needed.

7.8.2.7 Commercial Timber Management

Certain areas outside of the CCA are more conducive to growing pine species other than longleaf. Due to the urban interfaces, smoke sensitive areas, budget shortfalls, and current manpower constraints, the ability to restore and maintain a healthy longleaf ecosystem is not possible in these areas. Thus, these areas will be managed more efficiently to generate revenue, thereby increasing longleaf restoration efforts inside the CCA. These areas have been designated the Timber MEA as shown in Tab 6—Forest Management Component Plan. Existing longleaf trees within these areas will be retained with the hope that longleaf restoration efforts may be possible in the future.

7.8.2.8 Longleaf Stump Harvests

Historically, the forest management program at Eglin AFB extracted old longleaf stumps for rosin throughout the reservation. With the inclusion of the eastern indigo snake as a threatened species, as well as a host of other longleaf associated species, these activities ended in the mid-1980s; however, in areas where a land-use change is going to occur and stumps are to be cleared for construction, these activities will continue as an additional forest product revenue generator.

7.8.2.9 Sand Pine Seed Tree Cuts

Certain locations on Eglin AFB have been designated as long-term sand pine management areas (Table 7-4; Figure 7-10 and Figure 7-11). These managed areas are outside of the CCA and are not considered potential expansion areas for RCWs due to multiple factors, including proximity to the urban interface (and associated limits to fire management) and mission restrictions.

7.8.2.10 Firewood and Other Over-the-Counter Forest Product Sales

The public may obtain permits from the Eglin NRS office for a variety of forest products, including firewood (both individual use and commercial use), pine straw, palmetto fronds, palmetto berries, oak leaves and deer moss. Prices and rules for the permits may be viewed on the most recent Outdoor Recreation map.

7.8.2.11 Best Management Practices

Eglin AFB follows the Silviculture BMPs to minimize impacts to the environment resulting from forest restoration activities (Florida Department of Agriculture 2011). BMPs for a representative stream riparian area on Eglin AFB are presented in Table 7-5. The DoD may be held to higher standards than what is expected of private landowners. The BMPs set forth by the Florida Forest Service include specific guidance

for timber harvests, site prep, planting, working around wetlands and streams, stream crossings, construction and maintenance and forest roads.

Table 7-5. Primary and Secondary Special Management Zones for representative Eglin Air Force Base stream (perennial stream [0 to 20 feet wide] with low-erodibility soils).

	Primary Special Management Zone		Secondary Special Management Zone	
Slope	**Width (feet)**	**Management Criteria**	**Width (feet)**	**Management Criteria**
0–2	35	• No clear-cut harvesting • Selective harvesting with restrictions • Protection of very large and/or old trees; snags and cavity trees, trees overhanging water • No mechanical site prep, loading decks, main skid trails, road construction; restrictions on pesticides and herbicide application	None	• Clear-cut harvesting and unrestricted selective harvesting allowed with the following operational restrictions: • No mechanical site prep • No main skid trails, loading decks or landings • Do not clean spray equipment or discharge rinse water from pesticide or herbicide applications • No road construction • No plowed firelines
3–7			10	
8–12			25	
13+			265	

Forest road erosion has the ability to impact the environment and can create significant BMP violations. Forestry personnel are responsible for improving forest roads to reduce soil erosion to the greatest extent possible. Erosion control practices should be effective during and after forest management activities. Before any work begins on an Eglin AFB timber sale, the contract inspector conducts a briefing with the contract logging crew emphasizing expectations and the crew's responsibility to follow Florida's BMPs. The timber management contract inspector will conduct inspections as frequently as once a day to ensure the crews working on Eglin AFB are following the BMPs. If an infraction is found by the contract inspector, the logging crew must take immediate action to correct it. If it is not corrected in a timely manner, the crew may face a monetary penalty or may lose the privilege of conducting business on Eglin AFB.

Tertiary Forest Road Management

The Maintenance of Land Test and Training Areas Program, 96 TW, 96 CEG, and NR will continue to work together to determine the status of tertiary roads. Some tertiary roads are critical for natural resources management activities such as timber harvests or wildland fire activities; however, some tertiary roads may be closed either permanently or temporarily if there is not an immediate need for access. Forest Management personnel work with logging contractors on construction, maintenance, and closure of logging roads to ensure BMPs are followed.

Restoration/Reforestation

The restoration/reforestation program promotes the restoration and natural regeneration of longleaf pine in support of ecosystem management and T&E species recovery. Since the 1980s Eglin AFB has shifted

reforestation efforts to focus on longleaf pine plantings (Figure 7-12). This section discusses the timber stand improvement and longleaf pine restoration/reforestation efforts in support of ecosystem management and T&E species recovery.

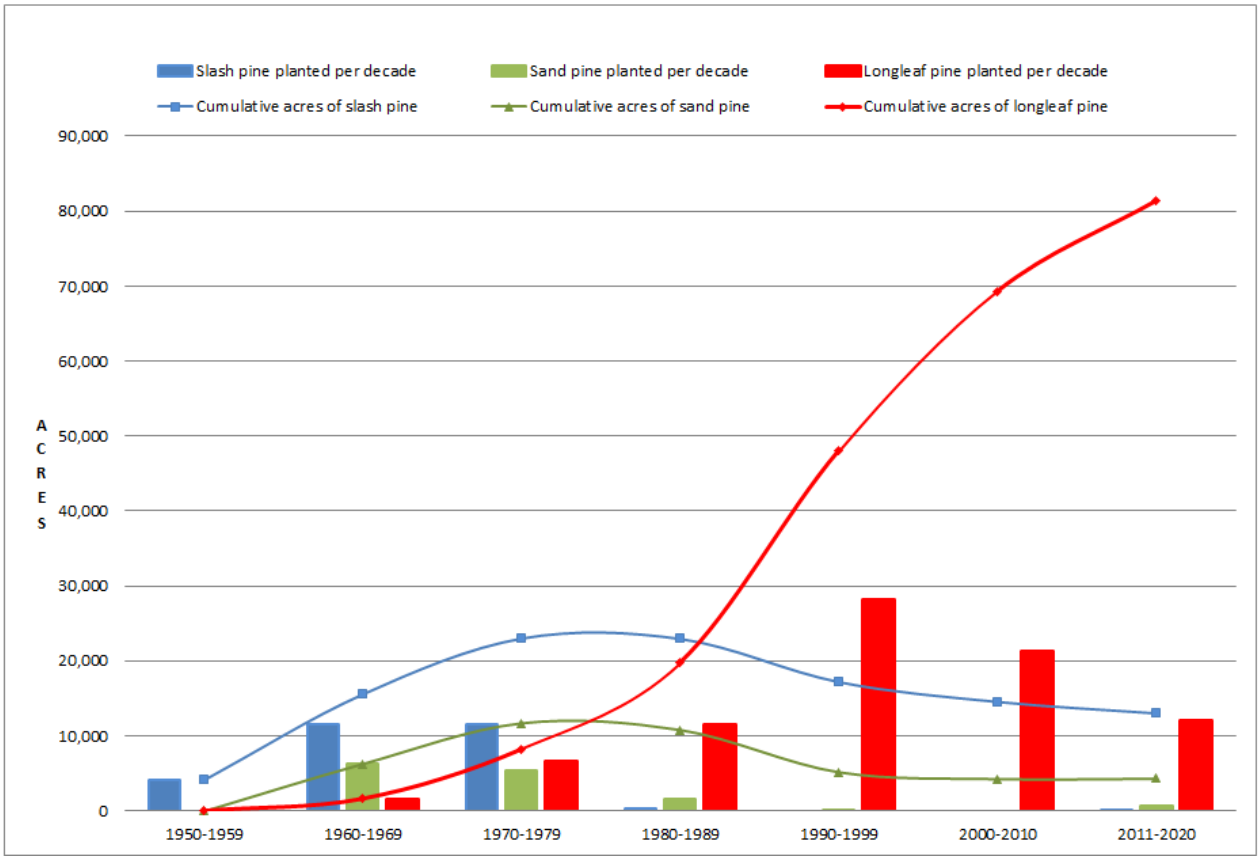

Figure 7-12. Pine plantation acres by species.

Timber Stand Improvement (TSI)

Eglin TSI involves physically cutting (mechanical) and herbicides (chemical) to control sand pine and oak encroachment in natural longleaf stands and longleaf plantations. The TSI goal is to improve RCW habitat, restore the longleaf pine ecosystem, and/or to improve habitat of other species (Table 7-6). Removing competing sand pine and oaks facilitates the re-establishment of natural longleaf pine and native groundcovers, and improves ecosystem structure, enabling low-intensity fire to maintain habitat. Priority sites for TSI are determined in coordination with Wildlife and Fire personnel to support maintenance and improvement of habitat in RCW hubs, the creation of potential recruitment clusters adjacent to the eastern sub-population hubs, and the connection of recruitment habitat to hub habitat—all while considering timing of timber sales and effective prescribed fire.

As of 2017, a significant amount of the merchantable sand pine had been harvested from the CCA through commercial timber sales, and more than 90,000 acres per year are burned; however, these actions have been unable to eliminate sand pine, due to prolific seed production of residual and nearby trees, epicormic branching of stumps, and/or refuge from fire (e.g., spotty burns, fire shadows, or unburned areas). Therefore, Eglin AFB use service contracts and cooperative agreements to obtain crews that use chainsaws, brush saws,

machetes, and hand-weeding to remove non-merchantable sand pine (Table 7-6). Eglin AFB also use in-house crews for mechanical TSI in areas with relatively sparse amounts of sand pine; these crews include personnel from all three NR elements.

Table 7-6. Planned forest restoration/reforestation activities for 2022–2026.

Timber Stand Improvement	**Acres/Year**
Sand pine removal TSI (brush saw/chainsaw)	3,000
Herbicide TSI	1,000
Reforestation	**Acres/Year**
Site preparation	3,000
Planting and natural regeneration	2,000
Native Plant Restoration	**Acres/Year**
Native plant restoration	1,000

Herbicide TSI

Herbicides are primarily used to control hardwoods, particularly evergreen oaks, in RCW and other habitats (Table 7-6). Herbicides are useful in areas receiving infrequent fire or where fire has been ineffective in restoring native structure; to restore habitat structure in a timely manner; and to facilitate the application of fire. Herbicides may also be used to control herbaceous species around young longleaf trees, such as in a young plantation. They are applied by helicopter, by manual crews traversing the site, and by ground-application equipment, such as an ATV and boomless sprayer. Herbicides are applied in accordance with numerous requirements, including NEPA and USFWS Section 7 consultation requirements (USAF 2007, 2008), Florida's BMPs, herbicide labels, industry standards, and DODI and AFI requirements (details in Tab 6—Forest Management Component Plan).

Longleaf Pine Reforestation

Eglin AFB reforests longleaf pine in sites where off-site trees—sand pine and slash pine—have been harvested. Prior to harvest, the timber sale units were sand pine plantations, slash pine plantations, natural areas, or salvage units. The timber sale initiates the restoration of quality longleaf ecosystem in areas compromised by off-site species; in many cases, it is a significant step in restoring RCW habitat.

Site Preparation

Site preparation (site prep) aids regeneration by creating the environmental conditions needed for seed/seedling establishment, early growth, and survival. Timber sale units are assessed before and/or after harvest to evaluate site prep needs and site conditions; these drive the selection of site preparation method (Table 7-6). Typical site preparation prescriptions include those listed below.

- Woody logging debris + former off-site pine plantation ➔ Chop
- Brush (live vegetation) + former off-site pine plantation ➔ Chop
- Brush or herbaceous competition ➔ Herbicide (and burn if feasible)
- Desired native groundcover species ➔ use selective herbicide or application method

- Oak competition ➔ hexazinone
- Yaupon or waxy competition ➔ triclopyr mix
- Woody logging debris ➔ Pile and burn if feasible
- Competition + desired native groundcover ➔ selective herbicide (and burn if feasible)
- Competition ➔ herbicide (and burn if feasible)
- Bare mineral soil ➔ No additional site prep
- Longleaf Pine Natural Regeneration or Seedling Planting

Natural and salvage units are assessed for natural regeneration potential (sufficiency of existing seedlings, saplings, potential seed trees, and potential cone crops). These assessments may indicate a need for under-planting with containerized longleaf, prescribed fire, and/or herbicide treatment. Harvested natural and salvage sale units are reforested by planting containerized seedlings, by natural regeneration, or both methods (Table 7-6). Harvested areas with sufficient potential seed-producing trees or more than 200 seedlings per acre are designated as regeneration emphasis areas.

Harvested plantations and natural/salvage units that have few residual longleaf or low potential for natural regeneration are hand-planted with containerized longleaf pine. Containerized longleaf pine seedlings are planted at 450 to 550 seedlings per acre, varying spacing and density to mimic naturally occurring regeneration. Approximately 750,000 longleaf seedlings are planted each year.

Native Groundcover Restoration

The objective of the Eglin AFB native grass restoration program is to supply the base and its Gulf coastal plain partners with a native seed source for understory restoration, erosion control sites, sand pine removal areas, plantations, and site reclamation (Table 7-6). Eglin AFB is developing native seed collection areas and seed orchards and planting native seeds in needed sites. Eglin AFB is collaborating with native seed production companies to implement the Longleaf Alliance's native seed program. Details are available in Tab 6—Forest Management Component Plan.

Timber Management Emphasis Area (MEA)

There are areas of Eglin AFB where it is not feasible to manage for a longleaf pine ecosystem. The main reason for this is a lack of defensible prescribed burn boundaries. Therefore, it has been decided that these areas, which are outside of the CCA, should be managed as efficiently as possible. Due to budget cuts, it has become more important than ever to manage in a fiscally responsible manner. There are other native pine species that do not require prescribed fire and that can provide a greater return on investment. The proceeds from the sale of these forest products will be used to further longleaf restoration inside the CCA. Other pine species that may be planted include sand pine, slash pine, and loblolly pine (*Pinus taeda*).

7.9 Wildland Fire Management

Applicability Statement

This section applies to USAF installations with unimproved lands that present a wildfire hazard and/or installations that use prescribed burns as a land management tool. This section **IS** applicable to Eglin AFB.

Program Overview/Current Management Practices

The success of the Fire Management program (now under Air Force Civil Engineer Center/Environmental Center of Excellence/Operation Division/Fire through the Eglin WSM) at Eglin AFB is pivotal to the success of the goals and objectives of the 96 CEG/CEIEA. Mission support, ecosystem management and protection

of life and property all depend on a professionally managed wildland fire program. Eglin AFB has globally significant, fire dependent ecosystems and faces a significant threat from wildfires. Due to smoke management constraints, mission requirements, adjacent urban areas and a legal requirement for an aggressive prescribed fire program, Eglin AFB has a highly complex fire management program.

> Vision: "Professionals Leading the Nation in Adaptive Fire Management"
>
> Mission Statement: "Enhance military mission capability and long-term range sustainment on Eglin Air Force Base through an adaptive wildland fire program that minimizes risk from wildfires, enhances ecosystem resilience through science-based application of prescribed fire and provides key fire related information to decision makers."

Until 2013 when the Air Force Wildland Fire Branch (AFWFB) assumed responsibility, Eglin NRS had managed wildland fire on Eglin AFB since the transfer of the land area that now makes up the Eglin Reservation to the DoD in 1940. Until the mid-1970s, the focus was primarily wildfire suppression, although prescribed fire was practiced on a small scale (5,000–15,000 acres/year in the 1960s) for fuel reduction, range maintenance, and improvement of deer, turkey, and quail habitat. Currently, the Eglin WSM has a goal to average at least 90,000 acres of a combination of prescribed fire and managed wildfire per year on a five-year average and responds to approximately 50–75 wildfires per year on average. The prescribed fire program has been cited by the USFS in a "Fire Management Today" article as being among the top four in the nation in terms of acres burned (USFS 2005). When this level of on-the-ground fire activity is considered in light of Eglin AFB's progressive utilization of partnerships, technology, strategic planning and science, it can be understood why the Eglin AFB wildland fire program has become recognized as one of the most progressive and important in the country.

The success of Eglin AFB's Fire Management Program can be attributed to the high level of experience and expertise on the staff and their dedication to the adaptive management process. The Eglin WSM is continually incorporating new information into its decision-making to improve the efficiency, safety, and quality of its program. Investment in advanced GIS technology and Oracle Database Management has put Eglin AFB in a leadership position for developing support tools for making scientifically sound and informed decisions. For example, the Fire DSS, now in use for all Continental U.S. installations by the AFWFB, was originally developed at Eglin AFB and provides real time analysis and reporting of fire data summaries for improved fire management decision-making. Another example of technology developed at Eglin AFB is the Prescribed Fire Prioritization Model, which use ecological information in a spatial modeling framework to determine the highest priority areas to apply fire to the landscape given limited resources and time. These tools are interactive as well, with the Fire DSS supplying readily available information to inform managers when compiling the prioritization model.

Eglin AFB's wildland fire program is managed to the highest national standards, adhering to the National Wildland Fire Coordinating Group (NWCG) guidelines. AFMAN 32-7003, Section 3P, states clearly that wildland fire management personnel "must meet the standards of the NWCG Wildland Fire Qualification Subsystem Guide (PMS 310-1/NFES 1414). Similar wording can be found in DODI 6055.6.E2.5.9. Eglin AFB's Wildland Fire Management Plan (WFMP) details the base's compliance with policy.

Values at risk to Eglin AFB's wildland fire program are detailed in Chapter 1 of the WFMP (Tab 1—Wildland Fire Management Plan) and include: firefighter safety, mission operations and assets, T&E species, cultural resource concerns, public use activities, and real property at risk. Descriptions of staffing, training, organization, equipment, air operations, public relations, and fire effects monitoring program can also be found in Tab 1—Wildland Fire Management Plan. The Fire Management program at Eglin AFB consists of three interrelated components.

- Direct Mission Support
- Prescribed Fire
- Wildfire Management

7.9.1 Direct Mission Support

Direct mission support on the Eglin AFB military complex is accomplished in several ways. The Eglin WSM coordinates with the Eglin Wildland Fire Program Coordinator (WFPC), who is currently the Eglin NR Chief, to determine the daily fire danger level and inform Eglin AFB missions of any accompanying restrictions based on a Specific Action Guide. During periods of high fire danger and/or for missions with a high probability of starting a wildfire, the Eglin WSM provides on-scene fire suppression resources for "hot mission standby" as well as information on ways to mitigate fire danger. Upon request from test engineers and/or range chiefs, and when conditions allow, prescribed burning of target areas may be completed prior to missions that would otherwise be likely to start wildfires to mitigate potential impacts to natural resources. Each winter, the Eglin WSM prioritizes burning of Eglin AFB's most heavily used test areas where wildfire occurrence is the most prevalent to mitigate wildfires and prevent potential mission delays or cancellations.

Eglin WSM serves as the center for dissemination of fire danger advisories, fire status updates, and technical advice to mission planners on fire-related issues. Related to this is an ever-increasing involvement with the military mission planners related to vegetative manipulation with fire for specific mission needs. The changing forest structure that can result from the application of fire for ecological reasons is not always optimal for certain military use of the land. While certain sensor testing may need large swaths of fairly homogeneous forests, which can be achieved through the application of prescribed fire, dense forests where fire is excluded may be needed for visibility screens, or to serve as sonic barriers.

Fully understanding these needs, as well as Eglin WSM's role in helping to meet them, will be a focus in the current planning cycle. Annual prescribed fire planning takes into full consideration the mission requirements for both prescribed burning and areas of fire exclusion. Eglin WSM will also be playing a substantial role in the implementation of prescribed fire on Eglin AFB's cleared test areas.

7.9.2 Prescribed Fire

Prescribed fire is the most important ecosystem management tool for Eglin AFB's managers. An aggressive prescribed fire program is essential for meeting ecosystem management goals, maintenance/restoration of natural communities including enhancement of T&E species habitat, and control of non-native plant species. In addition to improving habitat for numerous fire dependent plants and animals, it is used for minimizing damage and costs from wildfires, reducing mission interference from wildfire smoke and wildfire suppression efforts, eliminating Brown Spot Needle Blight disease from longleaf pine seedlings, preparing areas for pine regeneration, and manipulating vegetation for mission requirements. Prescribed fire requires close coordination with military mission personnel as well as state and federal cooperators/regulators. The complexities of smoke management, military mission coordination and airspace restrictions pose significant challenges to the prescribed fire program.

An average of approximately 90,000 acres per year must burn to meet ecosystem management and protected species goals at Eglin AFB. As the recovered RCW population grows, and management emphasis shifts to RFS and gopher tortoise, Eglin AFB must maintain more habitat with fire. Fire managers have gained efficiencies and knowledge over the past several years that have allowed them to increase the number of acres burned with minimal increase in costs (primarily just fuel expenses). The best available science on longleaf sandhills management and fire-dependent T&E species management in the Southeast demonstrates the efficacy of very frequent fire. Frequent (and subsequently low intensity) fires are typically patchy,

leaving nesting cover for ground nesting birds and small mammals as well as patches of unburned saw palmetto (*Serenoa repens*) suitable for black bear denning sites.

Burning more frequently in lighter fuels is safer and less expensive per acre and yields positive results from the ecological perspective. In 2018, the AFWFB decided to allow acres burned during managed wildfires to be counted towards fire treatment INRMP objectives if the wildfire effects meet existing resource management objectives. This change in accounting of treatment acres positively incentivizes the Eglin WSM to allow wildfires to burn when there is limited impact to the military mission and actively manage some fires to a larger size, for resource benefit. Increased reliance on letting wildfires burn to meet annual burn targets has been found to be a successful strategy as the Eglin WSM adapts to a four-fold increase in Eglin AFB mission activity over the past ten years. As the USAF mission tempo has increased and resulted in fewer available burn days, the Eglin WSM has adapted by attempting to combine burn units and burning more acres in a given day. Some of the more recent species-based fire management strategies for this planning cycle include increased emphasis on burning RFS pond basins, reducing woody encroachment with fire in streamside riparian areas to benefit Florida bog frog and Okaloosa darter, and scheduling burns for gopher tortoise habitat improvement and soft release. Operational fire management initiatives include standing up a small unmanned aerial system (sUAS) program for improved wildfire detection, prescribed fire and wildfire management, and firefighter safety and instituting a resource tracking system for improved situational resource awareness and safety.

Smoke management in some of the world's busiest airspace, around visibility-sensitive military missions, is managed using the best available technology (detailed in Chapter 3.6 of Tab 1—Wildland Fire Management Plan. Computer modeling (NOAA Hysplit) of smoke plumes using inputs from spot weather forecasts, on-site weather stations, and Eglin AFB's weather squadron is coupled with daily coordination/notification (via e-mail, the Internet, and fax) to minimize chances of negative impacts to local communities and the military mission.

Planned burns are prioritized through a GIS-based spatial modeling process known as the Prescribed Fire Prioritization Model, a GIS model that use spatially explicit ecological drivers for fire to identify the highest priority burn units for prescribed fire treatment within a fiscal year given limited time and resources. Examples of ecological drivers for fire that comprise the model include time-since-burn, fire frequency, endangered species such as RCW and RFS, and whether a unit is within the Eglin CCA. The model is reviewed annually and can be altered as necessary to accomplish prescribed fire objectives. After the model run is finalized, the resulting map is reviewed by the 96 CEG/CEIEA Forest Management Office and the 96 CEG/CEIEA Wildlife Office, an AF813 is submitted with current year burn planning map, and the Eglin WSM Lead briefs the 96 TW RC3 for final approval.

Since 1999, aerial ignition using contract helicopters has lowered costs per acre by nearly 50 percent compared to ground ignition while allowing better utilization of limited weather windows. This method of ignition improves smoke management by allowing early completion of burns and better smoke dispersion due to thermal lift. ATV-mounted and handheld torches are used as needed to assist and supplement aerial ignition. Details for prescribed fire planning, policy, models, and implementation on Eglin AFB are covered in Tab 1—Wildland Fire Management (WFM) Plan. In the near future, the AFWFB is hoping that unmanned aerial vehicle (UAV)/UAS technology has advanced to the point that UAS platforms can perform the same ignition role as a helicopter for improved safety and reduced cost. The Eglin WSM is preparing by gaining the required Federal Aviation Administration and USAF UAS training, forging relationships with UAV vendors and specialists, cross-training with military units on Eglin AFB that use UAVs and supporting UAV natural resources research and demonstration projects.

7.9.3 Wildfire

The Wildfire program includes all aspects of fire prevention, detection, suppression, readiness, fireline, rehabilitation, and training. Both wildfire occurrence and associated risk are high for Eglin AFB. As populations increase around Eglin AFB's borders, risks of negative impacts to the public from wildfires and their smoke also increases. Potential liability from wildfires for the DoD is present since most wildfires are started by military mission activity. Air Force structures, infrastructure, and test and training assets are also at risk from wildfire damage and smoke can negatively impact visibility sensitive missions. Unlike the other federal land management agencies in the Departments of Agriculture and Interior, DoD does not currently have access to an emergency wildfire funding source. Wildfire readiness and suppression is an operations and management function currently funded at Eglin AFB through a reimbursable account provided by the 96 TW.

The Eglin AFB Reservation is delineated into three fire management units ([FMUs] Figure 7-13). FMU 1 and FMU 2 are located in the interstitial area and are characterized by contiguous wildland vegetation. These vegetative zones are not in discrete units and tend to blend with each other. FMU 3 is within the administrative area of the reservation. Primary operations for both wildfire suppression and prescribed fire application are based on the fuels and fire return intervals in the FMUs, as described below. Delineation of Eglin AFB into these FMUs provides general guidance for fire operations. Primary operations for wildfire suppression are based on the fuels and fire return intervals as described in the FMUs as follows.

FMU-1—Fire return intervals historically less than 10 years with priority for burning. Areas within FMU 1 are prioritized for prescribed fire and surface fires are common with crown fires occurring only during periods of high to severe fire weather conditions. Most of the active test areas occur within FMU 1, and resource values, for species such as RCW, gopher tortoise, and RFS, are high within this zone. Approximately 275,000 acres of the Eglin Reservation comprise this zone.

FMU-2—Fire return intervals historically greater than 10 years and burning not feasible. Suppression is the primary fire management action occurring in this zone due to proximity to urban-interface, lack of defensible boundaries, lack of fire history, and/or smoke management constraints. Fires in this zone are generally small and slow moving except during periods of drought, low relative humidity, and high winds. Under these conditions extreme fire behavior can result and difficult to contain fires can occur. This zone encompasses approximately 163,000 acres of the Eglin Reservation.

FMU-3—Improved Areas; includes developed and paved areas such as Eglin Main, Duke Field, Choctaw Field, 7th Special Forces Group cantonment area, C-6 radar site, and other airfields and built-up areas that won't typically burn. Approximately 20,000 acres are in this zone.

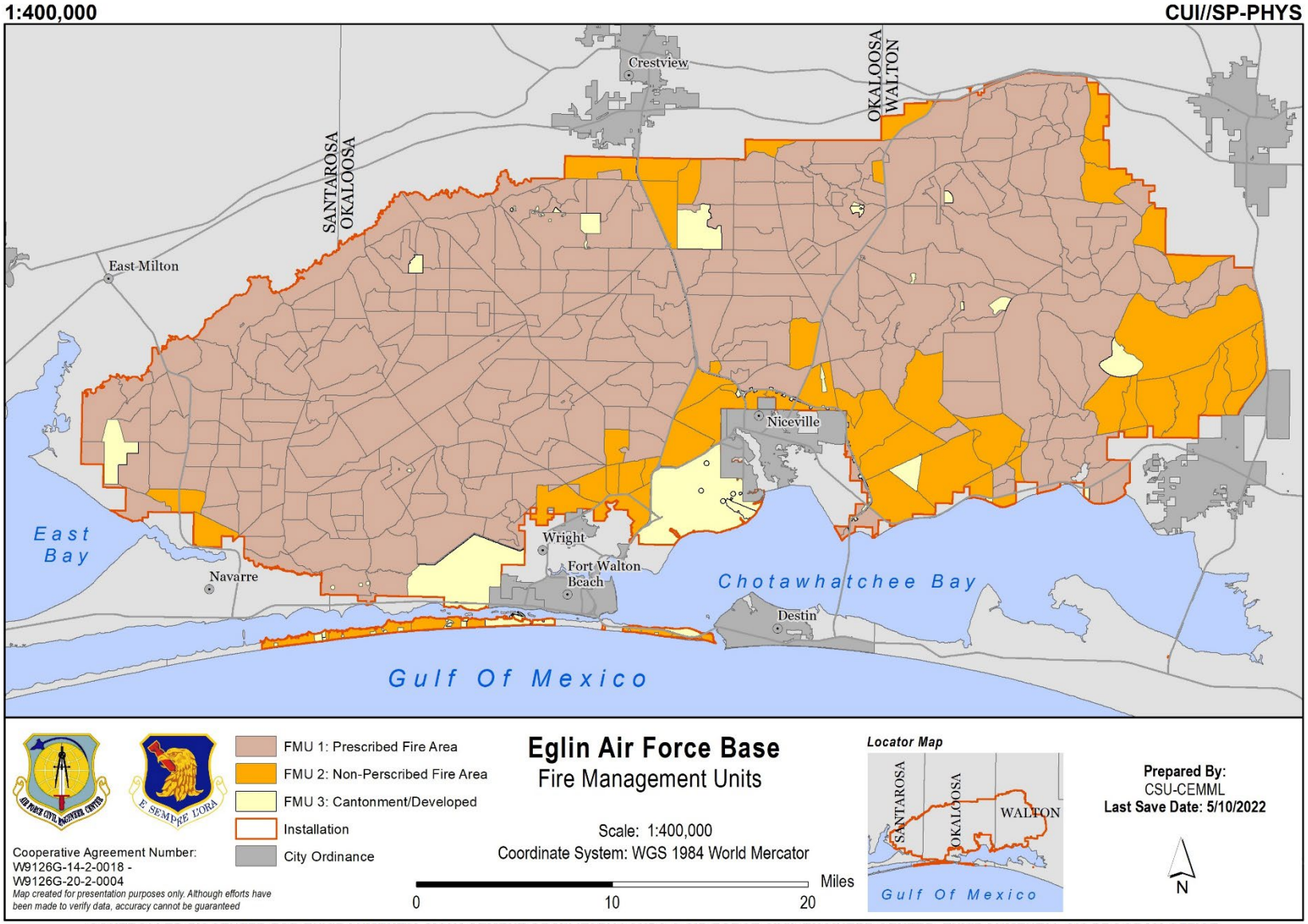

Figure 7-13. Fire Management Units.

Figure 7-14 shows the limits to wildfire suppression activities. The Eglin WSM updated the Limited Suppression Areas map and guidance for fire operations in these areas in Fall 2019 to provide for greater flexibility while ensuring firefighter safety. Most of the No Suppression and Restricted Suppression areas have potential UXO contamination and are treated as no plow (indirect attack) zones except under certain circumstances and with approval from the Eglin WSM Lead. The Underbrush Area is a secured area with military supervision required upon entry. Biologically Sensitive Areas such as wetlands, high quality natural areas, steep slopes, and T&E species habitat are areas where plow operations are normally not conducted. Personnel responsible for deciding suppression activities in these areas are NR manager, WFPC, Eglin WSM Lead, or another designated representative. At all times, for all wildfires, the safety of firefighting personnel will be the governing consideration.

Considerations that limit fire suppression actions shown in Figure 7-14 are described below.

Restricted Suppression Areas (green in Figure 7-14)—Within Restricted Suppression areas, plows will not be used off of range roads for fireline construction except in extreme conditions and with the approval of the Eglin WSM Lead or his/her designee. Suppression operations are typically limited in the restricted suppression zones due to elevated risk of UXO and to keep fuel loadings in these wildfire prone areas light. During periods of high to extreme fire danger the Eglin WSM Lead or their designee may authorize direct action to prevent catastrophic damage to natural resources, and/or to enhance firefighter safety and/or mission support.

No Suppression Zones (red and black in Figure 7-14)—Due to a high level of contamination from UXO and shrapnel, several target areas including B-7, A-77, A-78, A-79, B-82, C-2, the "rice paddies" area of B-70, and much of C-52 have been identified as "no suppression zones." These areas are shown on the Limited Suppression Areas map (Figure 7-14). Suppression activities will generally be replaced with defensive back-firing operations and/or a monitoring strategy until the fire can be declared out. Direct attack is prohibited unless approval has been granted by the Eglin WSM Lead or their designee(s). Approval may be granted only during times of "Very High" or "Extreme" fire danger and only after the risks (see below) have been assessed and agreed to by individuals carrying out the task. Approval will only be granted to prevent catastrophic damage to Air Force assets, surrounding natural resources and/or surrounding civilian populace.

The risk assessment will fully consider the following factors.

- Safety risk to firefighters (including, among other things, keeping the fire small now vs. fighting a larger fire later)
- Fuel conditions
- Current and predicted weather
- Munitions in use at time of ignition and the likelihood of live rounds in and/or adjacent to the fire
- UXO from previous missions

Active Military Missions—If active missions are ongoing, suppression activities may be restricted. Decisions regarding suppression on active test areas or other parts of the Eglin Range complex require coordination with Joint Test and Training Operations Control Center and assessment of the current and potential fire situation. Designated Jackson Guard and/or Eglin WSM personnel will make these decisions. Depending on fuels, mission, and other installation fire activity, suppression may take any form, from full, direct line construction to a block and burn containment strategy. Additionally, airspace restrictions from military mission activity can preclude the use of aircraft for fire suppression activities.

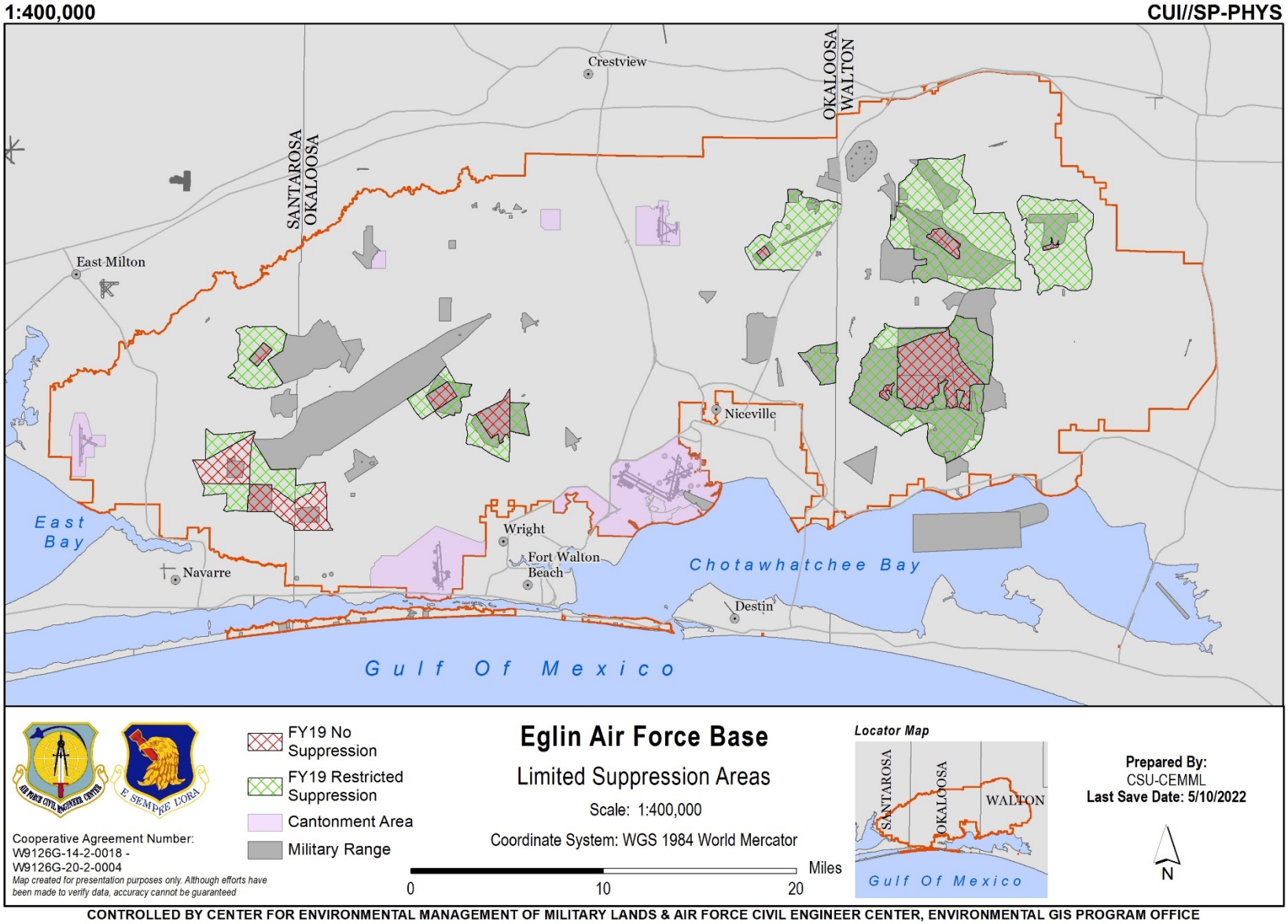

Figure 7-14. Limited Suppression Areas Map. NOTE: This is a data snapshot.

Underbrush Area—This 9,590-acre area is a secured area with the full notification procedure required upon dispatch. Military supervision is required in this area and will be provided upon entry following the completion of the notification procedure. Currently no prescribed fire is allowed in this area. The risks from UXO or other weaponry is unknown, though the heavy fuel buildups and forest cover types in the area present a significant risk for severe wildfires.

For information on these and other suppression considerations see Tab 1—Wildland Fire Management Plan. More specific information regarding Eglin AFB's wildfire response can be found in the *Full Spectrum Threat Response Plan*.

Fire Detection

Detection missions are scheduled in accordance with Eglin AFB's Specific Action Guide. Under normal conditions, detection will be furnished under the *Civil Air Patrol under terms of the Civil Air Patrol Eglin Range Fire Patrol Operations Plan* that is developed on an annual basis. Fire detection on Eglin AFB is supplemented by fire towers, mission aircraft, Eglin Security Police (Range Patrol in particular), and casual observers. Reporting procedures are outlined in the *UEC Environmental Handbook*, base phonebook, EAFBI 13-212, outdoor activities map, and regulations book.

Preparedness Activities

The Wildfire Specific Action Guide serves as the foundation for preparedness and wildfire response on Eglin AFB. Equipment is maintained on daily basis and personnel maintain a state of readiness for initial attack. When fire danger or occurrence is "High", pre-positioning of equipment and personnel may be required. When wildfire risk and/or occurrence is "Very High" to "Extreme", additional resources may be ordered through the AFWFB. If the cost of these additional resources is likely to exceed Environmental Management Branch's funding sources, the 96 TW Commander must approve the order for additional resources through the pre-established TW reimbursable account.

At "Very High" and "Extreme" Fire Danger, the Eglin WSM Lead and WFPC screen all hot missions on Eglin AFB for the risk of starting a wildfire with potential to exceed the capacity of the Eglin WSM and Eglin Fire Emergency Services (EFES) to suppress. A "Hot Mission Advisory" is sent day prior to the Hot Seat mission schedulers for review and comment. Those missions deemed too high of a risk to proceed are put on hold until Fire Danger drops back down to "High" or below unless the threat of a mission-caused wildfire can be mitigated (e.g. moving to a different test area that has burned recently, placing targets in bare ground areas, etc.).

An integral part of preparedness activities for Eglin AFB's fire program is "hot mission standby." The Eglin WSM responds to all requests from test engineers for "hot mission standby" for missions that have the potential to start a wildfire. Depending on fire danger, mission type and crew availability, standby with personnel and fire suppression equipment may be accomplished on site or from another location. This determination is made by Eglin WSM's officer-in-charge.

Fire Data Support System (DSS)

Current and historical (previous 10 years) wildland fire data figures and reports can be found in the web-based Fire DSS (Figure 7-15). The Fire DSS is a system that tracks information and trends on wildfires, prescribed fires, equipment usage, and personnel by fiscal year using relational data tables within an underlying Oracle database framework. The Fire DSS is managed by the AFWFB Data Manager and is housed on the Eglin Environmental Management servers. Dispatch, and/or the AFWFB Data Manager, is

responsible for transferring information from the Eglin Form 201 into the DSS. The current webpage address of the Fire DSS is https://em.eglin.af.mil/FireDSS/Fire/L1/Default.aspx.

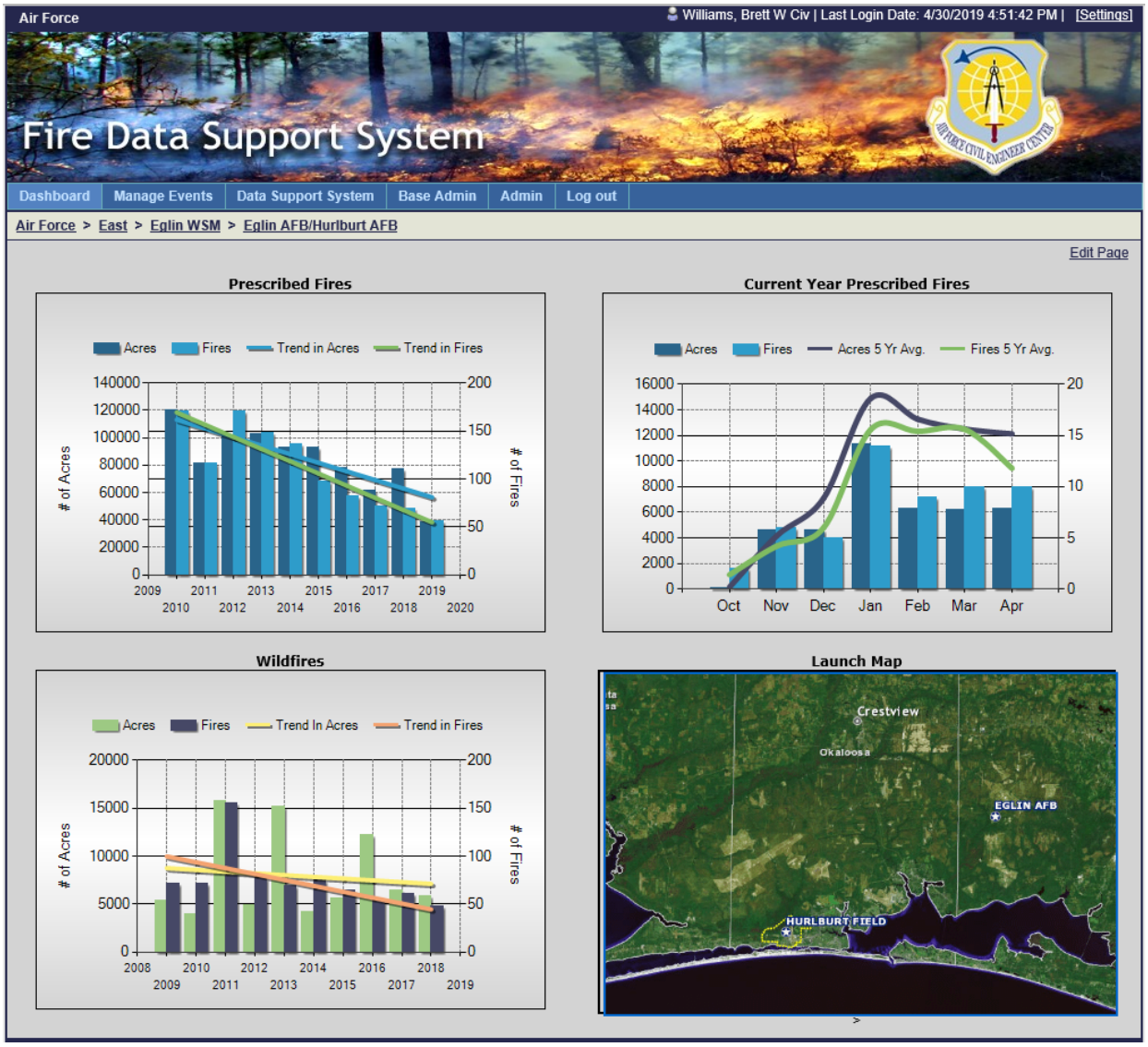

Figure 7-15. Homepage of the Fire Date Support System.

7.9.4 Climate Impacts on Wildland Fire Management

Across several climate scenarios, there is a general trend of increased temperatures and precipitation (CEMML 2019). Increased temperatures associated with climate change in the southeastern U.S., particularly during the summer months, has been predicted to decrease available burn days within prescription, increase ozone production and stagnation, increase the likelihood of deleterious fire effects to the longleaf pine tree canopy, and exacerbate logistical challenges to burning and suppressing wildfires due to direct temperature impacts to firefighters (Kupfer et al. 2020). During certain months of the year—primarily the late fall—projected increases in temperature are modest and are likely to be offset by increased precipitation. June is expected to have lower precipitation relative to its historical baseline across all climate

scenarios. August is expected to have lower precipitation in the RCP 4.5 2050 scenario and September is expected to have lower precipitation in the RCP 4.5 2030 and RCP 8.5 2030 scenario relative to their historical baselines. These decreases in precipitation could interact with the elevated temperatures to produce drier and more fire-prone conditions.

In the RCP 8.5 scenario, the months of April-June and September will experience drier conditions due to higher temperatures and rainfall that changes only slightly relative to the baseline. Such a change would likely result in more frequent and intense wildfires relative to current trends due to drier fuels. Similarly, wetlands, which under normal conditions may not carry fire, may be more available for fire under this scenario. Drier fuels in wetlands would make duff fires more frequent and remove significant barriers to fire from the landscape, leading to larger fires that are more difficult to control.

Increased average rainfall and temperature, which are predicted across all scenarios and timeframes, might impact the saw palmetto with varying effects under different scenarios, which could alter fire dynamics as this species is an important component of the available fuels and its fuel moisture levels can strongly affect fire behavior (Van Deelen 1991). If saw palmetto increases in understory dominance as a result of increased precipitation, fires may become more intense. Areas that shift from low or moderate load grasses to saw palmetto will experience an increase in fire intensity, and areas that shift from heavy grass load to saw palmetto will experience a decrease in fire behavior except under the highest intensity fire conditions. The fire rate of spread and intensity would increase with a shift from a litter dominated understory to a saw palmetto dominated understory under most circumstances. It is possible that grass could expand in dominance at the expense of saw palmetto, but woody plants—like saw palmetto—are generally favored under high carbon dioxide conditions and are likely to outcompete the grasses in some locales (Bond and Midgley 2000). Monitoring abundance and fuel moisture of saw palmetto would contribute useful information to fire behavior models and could be beneficial if performed in the long-term as climate conditions change.

7.10 Agricultural Outleasing

Applicability Statement

This section applies to USAF installations that lease eligible USAF land for agricultural purposes. This section **IS NOT** applicable to Eglin AFB.

7.11 Integrated Pest Management Program

Applicability Statement

This section applies to USAF installations that perform pest management activities in support of natural resources management, e.g. invasive species, forest pests, etc. This section **IS** applicable to Eglin AFB.

Program Overview/Current Management Practices

Invasive non-native species (INS) includes plants, animals, insects, diseases and other organisms that are spreading at an alarming rate throughout the world. An invasive species can be defined as a species that is non-native to an ecosystem and whose intentional or accidental introduction causes or is likely to cause environmental or economic damage or harm to human health. Once established, INS reduce biological diversity and disrupt the natural integrity and function of native ecosystems by altering habitat and out competing native species. The introduction and spread of non-native invasive species may also create significant, negative issues for military training or for other anthropogenic land use.

The Eglin Invasive Non-native Species Management Plan (INSMP) focuses on invasive non-native plant and animal species that cause or have the potential to cause negative environmental impacts to Eglin AFB ecosystems. The program's purpose is to protect the integrity of Eglin AFB's natural ecosystems by reducing and controlling the spread of invasive, non-native plant and animal species.

INS are a threat to the unique biodiversity supported in Eglin AFB ecosystems; thus, the base has instituted multiple measures to control their introduction and spread. Eglin NRS use an integrated pest management (IPM) approach for invasive non-native plant control, which includes survey, initial treatment, and periodic maintenance of invasive species. The INSMP IPM can be defined as a planned program using effective, sustainable, and environmentally sound methods including monitoring/surveys, herbicide treatment, trapping/shooting, public education, data management, habitat modification, cultural control, mechanical control, physical control (fire), regulatory control and, where necessary, the judicious use of the least harmful herbicides. Annual site visits are coordinated with out-granted property managers to review INS issues and surveys are conducted on an as needed basis. Eglin AFB maintains membership in the Cooperative Invasive Species Management Area and the FWC-sponsored Panhandle Invasive Species Working Group.

The overall program vision includes the following elements.

- Enhance the military mission capability and long-term range sustainment on Eglin AFB by minimizing the impacts of invasive species and nuisance wildlife.
- Protect T&E species and their associated habitats.
- Provide for public health and safety.

EO 13112, *Invasive Species*, requires federal agencies to identify actions that may affect the status of invasive species and to use appropriate programs and authorities to

- prevent invasive species introductions;
- detect populations of invasive species and rapidly institute cost-effective and environmentally sound control measures;
- monitor invasive species populations.;
- restore native species and habitat conditions in areas that have been invaded;
- conduct research and develop technologies to prevent the introduction of, and to control the spread of, invasive species; and
- promote public awareness of invasive species and the means to address them.

The order also states that federal agencies are not to authorize, fund, or carry out actions that are likely to promote the introduction or spread of invasive species unless the agency has made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species and that all reasonable measures to minimize the risk of harm will be taken in conjunction with the actions.

7.11.1 Guidelines for Program Management

- Prevent the introduction and spread of invasive plant species using an IPM approach including but not limited to hand pulling, mechanical control, herbicide application, and prescribed fire. Invasive animal species may be removed by lethal control, trapping or shooting.
- Provide early detection and rapid response to locate and control invasive species.
- Implement initial control and management by attempted eradication and fund follow up maintenance treatments until area is free of INS.
- Restore seriously degraded habitat with native plants.
- Promote interagency/local government cooperation.

- Maintain data base for information management/sharing.
- Promote education and public awareness about invasive species.

7.11.2 Invasive Non-Native Plants

Invasive non-native plants species have been documented at many locations across Eglin AFB. These species have the potential to outcompete and invade native plant communities, degrade T&E species habitat, and alter natural processes such as fire or the hydrology of wetlands. The most problematic areas are associated with the urban interface where illegal dumping and natural seed dispersal from private property have allowed establishment of invasive species on adjacent Air Force property. Eglin Main Base has several areas of concern involving INS because of the Valparaiso urban interface and past landscaping on the Main Base where Chinese tallow (*Triadica sebifera*) and other INSs were used in Main Base housing and facility landscapes. Road construction and maintenance activities have introduced and spread cogon grass and torpedo grass (*Panicum repens*) to areas of the Eglin Reservation. Roads also act as corridors for bird, wildlife, and vehicular movements that may transport invasive seeds or propagules throughout the Reservation.

The Eglin INSMP use INS management and control information provided by the FWC, Invasive Plant Management Section, the University of Florida, Institute of Food and Agriculture Services, and the Florida Invasive Species Council (FISC). Management methods and techniques for invasive non-native plants species may include, but are not limited to, herbicide treatment, mowing, disking, hand pulling, and prescribed fire. Additional detail is provided in Tab 8—Threatened and Endangered Species Component Plan.

7.11.2.1 Florida Invasive Species Council

The FISC is a non-profit organization made up of public agencies, scientists, researchers, land managers, environmental organizations, and private citizens that takes action against and focus attention on the spread of invasive exotic plants. The FISC has developed a ranking system for invasive non-native plants as to their invasiveness in natural areas. Category I species are those that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with native species. (This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage.) Category II species are those species that have increased in abundance or frequency but have not yet altered Florida plant communities. (These species may become ranked Category I if ecological damage is demonstrated.)

Category I Species on Eglin AFB

- Mimosa tree (*Albizia julibrissin*)
- Asparagus fern (*Asparagus aethiopicus*)
- Camphor-tree (*Cinnamomum camphora*)
- Wild taro (*Colocasia esculenta*)
- Air potato (*Dioscorea bulbifera*)
- Water hyacinth (*Eichhornia crassipes*)
- Cogon grass (*Imperata cylindrica*) (USDA Noxious Weed)
- Lantana (*Lantana camara*)
- Glossy privet (*Ligustrum lucidum*)
- Chinese privet/hedge (*Ligustrum sinense*)
- Japanese honeysuckle (*Lonicera japonicum*)
- Peruvian primrosewillow (*Ludwigia peruviana*)

- Japanese climbing fern (*Lygodium japonicum*)
- Natal grass (*Melinis repens*)
- Nandina/heavenly bamboo (*Nandina domestica*)
- Sword fern (*Nephrolepis cordifolia*)
- Torpedo grass (*Panicum repens*)
- Napier/Elephant grass (*Cenchrus purpureus*)
- Kudzu vine (*Pueraria montana*)
- Mexican petunia (*Ruellia simplex*)
- Brazilian Pepper tree (*Schinus terebinthifolius*)
- Tropical soda apple (*Solanum viarum*) (USDA Noxious Weed)
- Chinese tallow tree/popcorn tree (*Triadica sebifera*)
- Small-leafed spiderwort (*Tradescantia fluminensis*)
- Beach Vitex (*Vitex rotundifolia*)

Category II Species on Eglin AFB

- Tung oil tree (*Vernicia fordii*)
- Alligator weed (*Alternanthera philoxeroides*)
- Coral vine (*Antigonon leptopus*)
- Durban crowfoot grass (*Dactyloctenium aegyptium*)
- Silverthorn (*Elaeagnus pungens*)
- Lead tree (*Leucanea leucocephala*)
- Chinaberry tree (*Melia azedarach*)
- Golden bamboo (*Phyllostachys aurea*)
- Chinese brake fern (*Pteris vittata*)
- Purple sesban/rattlebox (*Sesbania punicea*)
- Guineagrass (*Urochloa maxima*)
- Chinese wisteria vine (*Wisteria sinensis*)

Twenty-four Category I and 12 Category II species have been documented on Eglin AFB. Chinese tallow, or popcorn tree, cogon grass, Japanese climbing fern (*Lygodium japonicum*), Chinese privet/hedge (*Ligustrum sinense*), and torpedo grass has been prioritized as the most problematic of the Category 1 species impacting Eglin AFB ecosystems. Many of Eglin AFB's high quality natural areas and rare and protected species are threatened by these non-native invasive species. INS and their management are discussed in Tab 11—Invasive Non-Native Wildlife, Feral Animals, and Nuisance Native Wildlife Control Plan.

INS Surveys

FNAI began INS surveys in 2001, and these surveys have continued annually. The locations and population attributes of target INS are recorded with a GPS unit. The data are then incorporated into GIS files utilizing geospatial data management software. Annual reports provide NR management with detailed information on INS including species, maps, GPS locations, types of landscape disturbances associated with occurrences, and management recommendations. Rare plant and animal occurrences in relation to established INS are also reported. Once an area has been surveyed, it is then scheduled for treatment. These surveys provide GPS locations and mapping capabilities to allow rapid response and treatment by herbicide application crews. Annual reports are compiled and are located in the Jackson Guard Library.

Invasive Non-Native Animal Species

The effects of non-native animal species on Eglin AFB natural resources have been documented. Non-native animals' prey on many rare and protected species, compete with native species for resources, destroy natural habitats, and can carry rabies and other infectious diseases that may infect native wildlife. 96 CEG/CEIEA has developed active control programs for the non-native feral pig, or wild hog, on the Eglin Reservation and feral cats, coyotes, and red foxes on SRI.

The USFWS's Ecological Services Office in Panama City, Florida pioneered the Northwest Florida Partnership to Protect Endangered and Threatened Species on Coastal Public Lands with a common goal of protecting and recovering ten protected species and providing public outreach in the coastal regions of the Florida panhandle. A consortium of 14 federal, state, and private organizations (including Eglin AFB) is sponsoring this effort which is implemented by the U.S. Department of Agriculture Wildlife Services (USDA Wildlife Services [USDA WS]). The program goals are to reduce impacts to rare and protected species caused by non-native predators and unnaturally high densities of native predators. The program covers most public lands from Pensacola (Escambia County) to CSB (Gulf County) and has dramatically reduced the depredation rate of sea turtle nests by coyotes, red fox, and raccoons (*Procyon lotor*) and helped reduce the impacts of these predators and feral cats on other species of concern. A primary goal of animal management on Eglin AFB is to protect and recover protected species by reducing impacts caused by non-native predators and unnaturally high densities of native predators.

Additional information concerning the management of INS (animal) can be found in Tab 8—Threatened and Endangered Species Component Plan and Tab 11—Invasive Non-Native Wildlife, Feral Animals, and Nuisance Native Wildlife Control Plan.

Nuisance and Injured Wildlife

Eglin NRS Wildlife element is one of three organizations responsible for responding to nuisance and injured wildlife reports on Eglin AFB. The Wildlife element maintains FWC steel trap, gun and light, and sea turtle stranding and salvage permits, and an FWC LOA to trap and relocate nuisance alligators. Nuisance wildlife on Eglin AFB typically includes birds, alligators, snakes, beavers (*Castor canadensis*), bears, foxes, raccoons, opossums (*Didelphis marsupialis*), nine-banded armadillo (*Dasypus novemcictus*), and coyotes. Responses to nuisance animal complaints from Eglin Main Base housing and business areas are normally handled by the 96th Civil Engineer Group/Pest Management Shop (96 CEG/CEOIUE) but assistance by 96 CEG/CEIEA may be requested. Primarily responses for the Pest Management Shop are for feral cats, dogs, raccoons, opossums, armadillos, insects, and snakes. Eglin AFB contracts the Panhandle Animal Welfare Society to take captured nuisance cats and dogs whose owners cannot be located and that cannot be received by Eglin Pet Welfare for adoption. Responses to reports of nuisance or injured wildlife occurring on Air Force property off the Main Base are handled by 96 CEG/CEIEA.

Examples of injured wildlife reports include birds entangled in fishing line or with broken wings, injured or sick turtles, foxes, coyotes, raccoons, opossums, deer, squirrels, bears, stranded marine mammals, and sea turtles. Depending upon the situation or the seriousness of the injury, options include (1) not intervening, (2) capturing and immobilizing, (3) taking to the Emerald Coast Wildlife Refuge or a local vet for treatment or rehabilitation, or (4) euthanizing. Relocation of nuisance wildlife is not normally conducted because of the documented negative impacts relocation has on resident wildlife populations and relocated individuals. Relocation of most species of wildlife to Eglin AFB is prohibited. All animal carcasses in the vicinity of Eglin AFB maintained roads or airfields are removed to other locations where they will not create a threat to vehicles or aircraft, such as attracting vultures. Carcasses on state owned right of ways are removed by Florida Department of Transportation contractors. Carcasses in public recreation areas are also disposed of

at an off-site location. Hog carcasses are typically disposed of in a manner not to become a nuisance and may be transported to a landfill.

Eglin NRS receives a variety of nuisance animal calls from military housing residents, Eglin AFB employees, and members of the public. Public outreach and education foster more understanding and tolerance regarding wildlife encounters. Residents in Eglin AFB housing are targeted with nuisance animal (black bear, snake and alligator) information. Examples of other public outreach tools include posting recreational ponds with alligator awareness signs, providing military housing residents with FWC "Living with the Florida Black Bear" and "Living with Alligators" pamphlets, and providing information on wildlife for local newspaper articles. Emphasis is placed on not feeding wildlife; "Don't Feed the Animals" brochures developed by NR are available for base workers and residents. Latches are provided on residential trash cans to discourage scavenging by black bears.

Specifically related to Corvias Military Living, the Government's management of the natural resources located within the premises leased to Corvias Air Force Living shall be limited to record-keeping sightings of certain species; and educating and advising Corvias employees. As stated in the Final Mitigation and Monitoring Plan for the Military Housing Privatization Initiative, throughout the life of the project, Corvias has several responsibilities. They will provide their own wildlife management services; educate residents and their employees, contractors and subcontractors; and respond to all resident complaints and concerns. Corvias shall pay particular attention to the containment of garbage and other wastes to avoid attracting bears or other wildlife. In addition, Corvias shall purchase and maintain bear-proof trash cans/bins in good condition, as approved by the Eglin AFB and Hurlburt Field Natural Resources sections. Corvias shall mandate their residents use such trash cans/bins at all times.

Many nuisance animal reports may be resolved over the phone by providing the correct information about the wildlife species in question. For nuisance animal complaints that are not on Eglin AFB property, 96 CEG/CEIEA does not typically respond with employee assistance other than verbal communication and advice; however, employees may respond at the request of FWC biologists to assist with black bear incidents off Eglin AFB property in local communities or similar emergency type situations. Members of the public with non-USAF nuisance animal complaints that cannot be resolved over the phone are referred to the Panama City FWC office or Panhandle Animal Welfare Society. The FWC website (www.myfwc.com) is also a highly recommended and valuable tool for public education/outreach concerning Florida wildlife. A wildlife response conflict database for use on Eglin AFB has been developed to track information on locations and seasonal trends in nuisance wildlife reporting's, and to provide a better understanding of resource requirements for managing nuisance wildlife.

7.12 Bird/Wildlife Aircraft Strike Hazard

Applicability Statement

This section applies to USAF installations that maintain a BASH program to prevent and reduce wildlife-related hazards to aircraft operations. This section IS applicable to Eglin AFB.

Program Overview/Current Management Practices

Birds and wildlife have the potential to cause millions of dollars in damage to aircraft as well as the loss of human life of aircrews and passengers. The 96th Test Wing, Flight Safety (96 TW/SEF) is the office of primary responsibility for monitoring and implementation of BASH Plan 91-212. Eglin NRS participates in the BASH program as directed by AFMAN 32-7003. This directive mandates NR to participate in the development, review, approval, and implementation of the Eglin BASH plan (see Tab 2—Bird/Wildlife

Aircraft Strike Hazard Plan). Additional NR responsibilities include assisting the 96 TW/SEF in maintaining current state and federal permits required for management of birds and wildlife to promote airfield safety. Eglin NRS also maintains active membership on the Bird/Wildlife Hazard Working Group and Air Operations Board.

Through a cooperative agreement, the 96 TW/SEF contracts with the USDA WS to provide employees for assistance with the implementation and management of the Eglin BASH program. These positions are the primary source for the management of the Eglin BASH program and implementing harassment activities on and around the Eglin AFB and Duke Field airfields. The USDA WS has developed a wildlife/bird hazard assessment of Eglin AFB and Duke Field airfields and a wildlife/bird hazard management plan and maintains a database to develop strategies for improved management of the airfield environment and to better understand and prepare for trends in bird and wildlife activity.

The Eglin NRS provides BASH support and assistance to USDA personnel for bird and wildlife harassment, lethal control activities, and other projects such as vulture roost monitoring, effigy placement, and migratory bird nest removal activities. Eglin NRS may also directly conduct BASH activities when USDA personnel are unavailable. Passive control measures under the BASH program include landscape design, elimination of food and roost sources, turf/water management, and forest management. Active control measures may incorporate pyrotechnics, bioacoustics, vulture effigy placement, and depredation (lethal control) activities. Depredation is implemented as a last resort when other harassment tactics are unsuccessful.

The Eglin AFB white-tailed deer control program, referred to as the Deer Aircraft Strike Hazard (DASH) program, is part of Eglin AFB's BASH program. The USDA WS and NR personnel respond throughout the year when airfield operations report deer activity near the airfield. Reports occur most often during the winter breeding season (November–March). Although deer numbers in the vicinity of the runways have declined since implementation of the DASH program, removal and control efforts continue as needed. Deer taken in association with the DASH program may be donated to animal refuges with large carnivores.

The potential for birds and other wildlife to interact with aircraft will continue to exist in the future and may in fact increase due to increased use of the Eglin AFB airspace. It is therefore anticipated that Eglin AFB's BASH program will be a requirement for the foreseeable future, and that NR, USDA WS, Flight Safety and Airfield Operations personnel should continue to work together to improve air safety on Eglin Airfields.

7.13 Coastal Zone and Marine Resources Management

Applicability Statement

This section applies to USAF installations that are located along coasts and/or within coastal management zones. This section IS applicable to Eglin AFB

Program Overview/Current Management Practices

7.13.1 Coastal Zone Management Act

In 1972, Congress enacted the CZMA to preserve, protect, develop, and where possible, to restore and enhance the resources of the nation's coastal zone. It encouraged coastal states to develop and implement comprehensive management programs which balance the need for coastal resource protection with the need for economic growth and development within the coastal zone. In response to the federal CZMA, Florida enacted the Coastal Management Act to manage, protect, and maintain the coastal zone and its resources. Under the Coastal Management Act, the Florida Coastal Management Program (FCMP) was established for determining federal consistency under the federal CZMA. Approved by NOAA in 1981, the FCMP is based

on 24 statutes and regulations administered by a network of nine state agencies and five water management districts. This framework allows the state to make integrated, balanced decisions that ensure the wise use and protection of the state's water, property, cultural, historic, and biological resources; protect public health; minimize the state's vulnerability to coastal hazards; ensure orderly, managed growth; protect the state's transportation system; and sustain a vital economy (FDEP 2011). FDEP is responsible for directing the implementation of the statewide coastal management program (FDEP 2011).

Landward boundaries in Florida are defined by the state, in accordance with the CZMA. Since no point in Florida is more than 70 miles from the coast, the coastal zone is defined as the entire state of Florida. The seaward boundaries extend three nautical miles into the Atlantic Ocean and nine nautical miles into the Gulf of Mexico. By this definition, all of Eglin AFB is located within the coastal zone.

Federal agency activities that have the potential to impact Florida's coastal resources are required to be consistent, to the maximum extent practicable, with approved state coastal zone management programs. Federal agencies, such as Eglin AFB, make determinations as to whether their actions are consistent with approved state plans. Each action will require either a consistency determination or a negative determination (Figure 7-16). A consistency determination review is a formal explanation of any proposed action that Eglin AFB is planning which may have an adverse impact, directly or indirectly, to the coastal environment of Florida, and how these actions are consistent with the 24 statues that make up the FCMP. A negative determination is warranted for any action that will not have a direct or indirect impact on Florida's coastal zone or its resources. Both consistency and negative determinations are submitted to the FDEP State Clearinghouse for review and concurrence. Authorized by Presidential EO 12372, the Clearinghouse enables state and local agencies and the regional planning councils to review federal activities. Consistency determinations are then disseminated to the relevant agencies that must review the proposed action and issue their concurrence of the determination. If a reviewing agency believes a project is not consistent with Florida's statutes, the FCMP requires the applicant to revise its plans based on guidance or requirements issued by reviewing agencies. In this way, the Florida State Clearinghouse and the Federal Consistency Unit work with applicants to produce projects that are consistent with Florida's statutes and that protect critical coastal resources.

In a joint collaboration between Eglin AFB and the FDEP, a General Negative Determination Agreement (GNDA) has been developed to eliminate reviews for regularly occurring actions on Eglin Reservation (Appendix C). The GNDA is targeted at actions that will not have a direct or indirect impact on Florida's coastal zone or its resources. In preparation of the GNDA, Eglin AFB informed the FDEP of all actions that were performed on Eglin AFB that required a negative determination of effect on the coastal region. From this list, the GNDA was prepared for actions that FDEP and Eglin AFB have agreed will not warrant a formal determination to be filed for review by the State Clearinghouse. Eglin AFB will continue to send consistency determination reviews for actions that are not covered under the GNDA. Eglin AFB, FDEP, and FWC will review this GNDA once every five years to revise and update if deemed necessary.

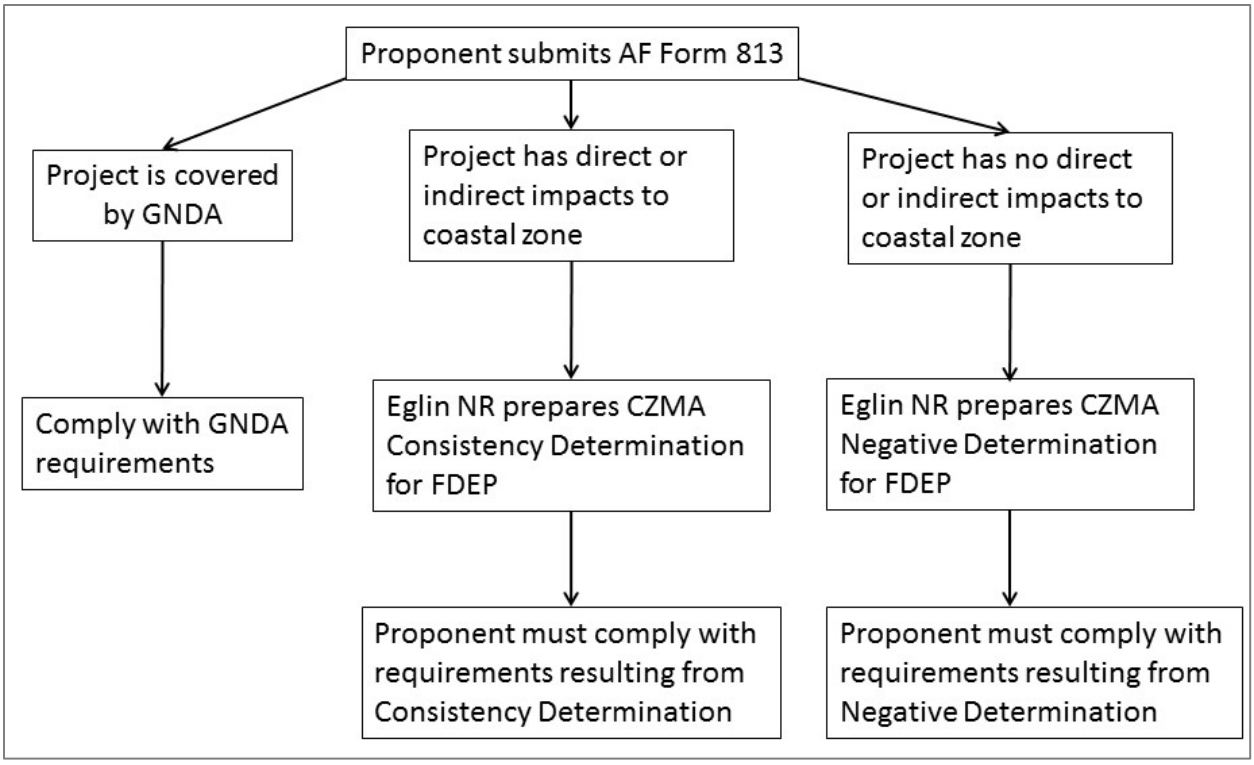

Figure 7-16. Process for identifying consistency with the Florida Coastal Management Program.

Estuarine and Riverine Ecosystems

Several estuarine and riverine areas are located on or adjacent to Eglin AFB, including Choctawhatchee Bay, Santa Rosa Sound, Yellow River, East Bay, and East Bay River. Emergent vegetation coverage in Choctawhatchee Bay is estimated at about 2,500 acres of (presumably) salt marsh and 3,700 acres of fresh marsh habitat (FDEP 2012). The dominant species are black needlerush (*Juncus roemerianus*) and smooth cordgrass (*Spartina alterniflora*). Emergent vegetation zones in the bay are not considered well developed, and marsh habitat is lower than that of other estuaries in the region (FDEP 2012). Submerged vegetation in Choctawhatchee Bay consists primarily of shoal grass (*Halodule wrightii*) and widgeon grass (*Ruppia maritima*) (FDEP 2012), with turtle grass (*Thalassia testudinum*) also occurring at a few sites (Yarbro and Carlson 2013). Seagrass beds are patchy, and coverage is greater in the western and central (higher salinity) portions. Seagrass coverage seems to have decreased over the last few decades, from a historic coverage of 3,000 to 4,000 acres to more recent estimates of 2,600 acres (Yarbro and Carlson 2013, FDEP 2012). Seagrass beds in Santa Rosa Sound appear to be stable (Yarbro and Carlson 2013). In the Sound, turtle grass and shoal grass are among the more common species, and Manatee grass (*Syringodium filiforme*) is present but uncommon.

Tidal salt marsh at East Bay consists primarily of black needlerush, smooth cordgrass, salt grass (*Distichlis spicata*), and saltwort (*Batis maritima*). Coverage is estimated at between 2,500 and 3,300 total acres for East and Blackwater Bays (Lewis 2010). The largest contiguous tract of salt marsh (about 1,500 acres) occurs along the southern shore of Garcon Point. East Bay once contained extensive seagrass areas, but these beds have disappeared. Less than 100 acres of seagrass/submerged aquatic vegetation is estimated currently in the East Bay/Blackwater Bay complex (Lewis 2010).

Fresh/brackish wetland habitat (floodplain marsh) occurs in freshwater riparian and estuarine environments of the East Bay area (Graham 2010). This habitat is generally located along the river mouths (Yellow, Blackwater, and East Bay Rivers) and tributary bayous, and is dominated by sawgrass (*Cladium jamaicense*), maidencane (*Panicum hemitomon*), giant cutgrass (*Zizaniopsis miliacea*), cattails (*Typha* spp.), and black needlerush. Estimates of marsh coverage of the Yellow River and its delta range from 1,500 to 2,400 acres (Florida Department of Natural Resources [FDNR] 1991, Lewis 2010). A moderate amount of submerged aquatic vegetation occurs in the estuarine areas of the Yellow River (Lewis 2010), and also extends into and along the western shoreline of Blackwater Bay (FDNR 1991). Species include tapegrass (*Vallisneria americana*), lemon bacopa (*Bacopa caroliniana*), widgeon grass, southern naiad (*Najas guadalupensis*), green fanwort (*Cabomba caroliniana*), and bladderwort (*Utricularia* spp.).

Eglin Air Force Base Barrier Island and Beach Ecosystems

Eglin AFB includes property on Santa Rosa Island and Cape San Blas. Eglin AFB controls 4,760 acres of SRI that includes a four-mile strip of limited-access beach eastward of Fort Walton Beach, and a restricted access 13-mile section extending to the west to Navarre Beach. Eglin AFB owns approximately 962 acres on CSB, which is located on St. Joseph Peninsula in Gulf County, Florida, approximately 90 miles southeast of the Eglin Reservation. A number of rare and protected species and habitats occur on both SRI and CSB, such as nesting sea turtles, shorebirds, and piping plover CH.

Coastal Barrier Resources, Coastal America Program, Marine Animal Protection, and Artificial Reefs

There are no Coastal Barrier Resources concerns for Eglin AFB, and the Coastal America program is not applicable. For marine animal protection, Eglin AFB conducts MMPA and ESA consultations with the NMFS and USFWS and follows all applicable requirements from those consultations. Eglin NRS participates in Florida's sea turtle and marine mammal stranding and salvage network program. Artificial reefs are distributed across portions of the EGTTR; these are avoided as much as possible during Gulf missions.

7.13.2 Climate Impacts on Coastal Zone and Marine Resources Management

Based on the vulnerabilities projected due to flooding, the following set of adaptation strategies have been curated for consideration in Table 7-7.

Table 7-7. Summary of suggested adaptation strategies based on sea level rise and SS projections.

Strategy	Implementation	Efficacy	Ecological Impacts	Ecological Resources
Artificial Breakwaters	1	3	Positive	Harris 2009
Bulkheads	2	3	1	Hester et al. 2006
Erosion Monitoring	1	2	Positive	NOAA 2018
Living Shorelines	1	2	Positive	NOAA Living Shorelines Workgroup 2015
Riprap	2	2	1	Gittman et al. 2016

Suggested adaptation projects are rated by their difficulty to implement and their relative efficacy. Ease of implementation is ranked from 1 to 3, with 1 being most difficult to implement and 3 being the easiest to

implement. Efficacy is ranked from 1 to 3, 1 being the least effective and 3 being the most effective. The ecological impacts related to adopting each of these projects are stated to be positive if no negative impacts are expected. If these projects are expected to have negative ecological impacts, they are rated 1 (low negative impacts) through 3 (high negative impacts).

7.14 Cultural Resources Protection

Applicability Statement

This section applies to USAF installations that have cultural resources that may be impacted by natural resource management activities. This section **IS** applicable to Eglin AFB.

Program Overview/Current Management Practices

The primary goal of cultural resources management at Eglin AFB is to support mission readiness through compliance with legislation governing historic properties and to provide for proper management. As a federal agency, Eglin AFB is required by law to consider the effects of its actions on historic properties. Mandating legislation includes the Antiquities Act of 1906, the Historic Sites Act of 1935, the National Historic Preservation Act of 1966 as amended, 36 CFR Part 800, the Archaeological and Historical Preservation Act of 1974, the Archaeological Resources Protection Act of 1979, the NEPA of 1969, the Native American Graves and Repatriation Act of 1990, the American Indian Religious Freedom Act, and AFMAN 32-7003, among others.

The Eglin AFB ICRMP is a guide for cultural resources impact analysis review, cultural resources standard operating procedures and compliance achievement, including scheduling, contracting and funding (USAF 2013d). This plan is formulated as part of Eglin AFB's compliance with the mandate for consideration of historic properties, outlines goals and objectives of the program, aimed directly at fulfilling Eglin AFB’s responsibilities to inventory and evaluate the historic properties under its jurisdiction. Like the INRMP, the ICRMP is updated annually (see Tab 5—Integrated Pest Management Plan).

INRMP activities are subject to Section 106 review and close coordination between Natural Resources and Cultural Resources occurs to avoid impacts to cultural resources, especially for timber sales, TSI, erosion control, prescribed fire, invasive species, and recreational use projects. Each year, NR electronically submits its proposed timber map to Cultural Resources to determine if the areas require an on-the-ground survey. If a survey has already been completed, Cultural Resources determines if there are any eligible sites present. Any eligible sites are then excluded from the sale area by Forest Management. If a survey has not been completed, the Cultural Resources and the timber management forester will determine survey priorities.

Fire Management coordinates with Cultural Resources through annual submission of an Air Force Form 813, which includes the annual burn map, so that Cultural Resources can identify resources and areas that need to be protected from fire and heavy equipment. Maps showing areas of cultural concern are included in the burn packets that the burn bosses and incident commanders use when a fire occurs in the area. Fire Management has also given S-130/190, basic wildland firefighter training to cultural resources personnel and issued them personal protective equipment so that they can be present on prescribed fires, or wildfires if needed, where there are cultural resource concerns. For areas of particular concern, site visits are coordinated between Air Force Civil Engineer Center/Environmental Center of Excellence/ Operation Division/Fire and Cultural Resources. Cultural Resources also helps prepare areas of concern prior to fires by clearing brush and other flammables.

7.15 Public Outreach

Applicability Statement

This section applies to all USAF installations that maintain an INRMP. Eglin AFB **IS** required to implement this element.

Program Overview/Current Management Practices

Public outreach is a critical component of any natural resource management agency. Without the support of partner organizations and local citizens, many management programs cannot succeed. Given these facts, the goal of public outreach efforts is to encourage understanding of support for, and involvement in the many management and monitoring programs at Eglin NRS. Since 1999, such outreach has been accomplished through (1) research partnerships and internships, (2) presentations and guided tours, and (3) volunteer involvement.

7.15.1 Volunteer Resources Program

There are many advantages to working with volunteers beyond the obvious one of accomplishing a job at minimal expense. Enabling the community to be actively involved with Eglin NRS management programs increases public support and public understanding of the work and planning behind management decisions. With volunteers, existing programs can reach beyond the limits imposed by personnel ceilings and budget restrictions, and projects that would not otherwise be attempted can be taken on. Volunteers can provide skills or expertise needed on only a temporary basis, and volunteer work can free up paid staff for more critical activities. Volunteer participation in NR programs expands Eglin NRS sphere of influence while also extending its budget.

Volunteers can be used in all areas of natural resources management except fighting wildfires. All levels and types of skills can be used and almost any type of work can be performed as long as it is work that

1. would not otherwise get done due to funding or personnel limitations;
2. enables paid employees to accomplish work that would not otherwise get done due to funding or personnel limitations; and
3. does not result in the displacement of any paid employees.

Over the years, members of the community regularly expressed interest in participating in natural resource management on Eglin AFB. A handful of volunteers helped with prescribed fire and various fish and wildlife projects, but until 1999, volunteer involvement was sporadic and lacked coordination. Recognizing a great potential to expand NR capabilities and improve community relations, in 1999 a full-time volunteer coordinator was hired to recruit, train, and supervise volunteer team members. In just the first three years, community participation in the Volunteer Resources Program increased by over 357 percent.

The first major project the volunteer coordinator undertook was the recruitment and training of a volunteer team to carry out sea turtle monitoring on a 17-mile stretch of Eglin AFB's barrier island. Since the initiation of this program in 1999, volunteers have successfully marked, protected, and monitored over 300 nests for three different species of protected turtles. This program alone is estimated to save more than $30,000 annually.

Volunteers have been successfully integrated into every area of natural resources management. In Fire Management, volunteers help with vehicle and equipment maintenance, transport equipment and food to personnel in the field, and receive training to help conduct prescribed burns. In the Wildlife Element, volunteers assist in conducting population surveys and monitoring for various species including burrowing

owls, sea turtles, shorebirds, gopher tortoises, and wild turkeys (*Meleagris gallopavo*). Volunteers also assist in game management, invasive species control, and various recreation projects. In the area of ecological monitoring, volunteers collect field data for fire effects monitoring, and assist in benthic macro-invertebrate sampling, fish community inventories, rapid habitat assessment, and storm turbidity sampling. In forest management, volunteers donate thousands of hours to plant native trees and vegetation for erosion control and restoration projects.

7.15.2 Presentations and Guided Tours

Eglin NRS is committed to teaching people of all ages about the conservation of Eglin AFB's natural resources. This is accomplished through a series of programs, field trips and publications each year. Eglin NRS personnel and volunteers give educational presentations to local schools and community groups as well as participate in career fairs and community poster sessions to increase awareness about natural resources. Eglin NRS also maintains an interpretive trail in front of the building that displays labeled native vegetation. Inside Eglin NRS, displays of animals and ecosystem dynamics are displayed for the education of the public

7.16 Climate Vulnerabilities

Applicability Statement

This section applies to USAF installations that have identified climate change risks, vulnerabilities, and adaptation strategies using authoritative region-specific climate science, climate projections, and existing tools. This section IS applicable to this installation.

Program Overview/Current Management Practices

To address the mandate in DoDI 4715.03 to plan for climate change impacts to natural resources, this section discusses preliminary initiatives and measures designed to reduce vulnerability against expected climate changes. Because the science and practice of adaptation is still in early stages of development, Eglin AFB will continue to research planning for climate change.

7.16.1 Background

While global climate change has been widely accepted by the international scientific community, forecasting regional or local responses to climate change and sea level rise is more difficult (IPCC 2007). For the initial climate modeling of Eglin AFB, future temperature and precipitation conditions for the AFB were forecast using the average of 16 general circulation models, with a high emissions scenario (Girvetz et al. 2009). This first round of modeling predicted that for the Florida panhandle, the average forecast for temperature changes is an increase of 3.2 °F for 2050 and 5.4 °F at the end of the century. The earlier round of modeling also found that the precipitation forecast is for no change by 2050 but a decrease in precipitation by five percent by the end of the century. Global climate change is also predicted to result in greater climate variability, with more extended droughts and increased storm intensity (Parry et al. 2007). More recently, CSU CEMML developed regional climate change models for Eglin AFB that project greater minimum and maximum temperatures and increased annual precipitation under several different climate scenarios (Section 2.2.1.1 Climate Projections at Eglin Air Force Base; CEMML 2019).

A direct and predictable impact of climate change is sea level rise. Global climate change is predicted to accelerate the historic rates of sea level rise, resulting in the permanent inundation of low-lying regions, the increased extent of episodic flooding, increased erosion of coastal areas, and saline intrusion into aquifers. Permanently lost will be areas of marsh, especially those adjacent to higher topographic areas and sea walls.

The change in sea level could alter the patterning of marsh communities and the salinity gradient in areas with substantial freshwater inflow.

While the exact amount of sea level rise is unknown and will vary locally, significant changes will take place in the near future. The most recent models predict between 0.75 and 1.9 meters of sea level rise by 2100 (Vermeer and Rahmstorf 2009). Sea level rise along the Gulf Coast is of particular concern because of the small range of tidal amplitude and the limited topographic extent of marsh habitat. A one-meter rise in sea level along the Gulf Coast from the Big Bend region of Florida to the Perdido River will result in a loss of 135,000 acres of marsh and land (TNC 2009). The National Research Council (2009) stated that "in the Gulf Coast, a two-to-four-foot rise in sea level would put 27 percent of the major roads, nine percent of rail lines and 72 percent of ports at or below four feet of elevation at risk, in spite of protective infrastructure such as dikes and levees." Specifically for Eglin AFB, models by Linkov et al. (2010) forecast a maximum loss of 18 percent of marshes during the next 30 years and less than two percent of beach habitat. Models conducted by CSU CEMML project a loss of up to 690.2 acres of the installation by 2065 (see Section 2.2.1.2 Climate Model Results; CEMML 2019) due to sea level rise.

7.16.2 Carbon, Greenhouse Gases and Biofuels

The storage of carbon in forest biomass, litter, and soils is a significant mitigation factor for climate change resulting from elevated emissions of greenhouse gases from fossil fuel combustion (NRC 2000, IPCC 2007, Wayburn et al. 2007). Since forest biomass and productivity are generally well known for most forest types in the south, it is not difficult to estimate the large carbon storage in longleaf pine biomass.

Regional land use activities interact with climate change in dynamic ways, and their influence upon the carbon cycle provides for feedbacks through the storage of carbon in forests, and the emissions of carbon via deforestation. In southeastern forests, the storage of carbon in biomass and soils is a mitigation factor for the emissions of greenhouse gases (carbon dioxide) from society's combustion of fossil fuels. Understanding the carbon cycle and management influences upon it are critical, especially the context for carbon dioxide emissions with prescribed fire in healthy forests versus wildfires in fire-suppressed scenarios. In carbon accounting, also understanding the carbon costs and efficiencies of harvesting forest biomass for fuelwood can inform environmental policies and influence the use of sustainable forest biomass for energy.

Ecosystem research has only recently begun to assimilate individual studies on fire-maintained longleaf pine into integrated carbon models that can evaluate net values for a range of different productivity classes (Starr et al. 2010). There is also a need to model a range of management scenarios, to include the utilization of prescribed fire versus its suppression and alternative wildfire scenarios, and alternative utilization of wood products as biofuels under different regulatory policies. Managers will need to understand how best to maximize the restoration and ecological value of biomass removal while minimizing the potential (both in the near and distant future) of negative and unintended ecological impacts.

The dominant vegetation on Eglin AFB, longleaf pine, is highly dependent on disturbance from fire to maintain the understory and facilitate recruitment. The role of disturbance from hurricanes may also be important in clearing understories, providing deadfall for fuels, and creating mosaic patterns of variable-aged stands. Analysis of the period from 1850 to 2020 showed increases in the number of tropical storms, hurricanes, and major hurricanes, suggesting that both the frequency and intensity of hurricanes is increasing, and the potential effects of this increasing disturbance are unknown (Gilliam 2021).

7.16.3 Management Responses to Climate Change

There are two primary categories of management strategies for addressing climate change and sea level rise: (1) increasing the resiliency of ecological systems and (2) providing areas for migration of habitat and populations of a given species (also known as a mitigation strategy) (Joyce 2008, Peterson 2008). The uncertainties surrounding actions related to climate change or sea level rise require an adaptive management approach to the evaluation and implementation of management responses (Kareiva 2008). Where applicable, we include possible management responses to climate change in the corresponding sub-sections of Section 7.0. Some of the areas of uncertainty include how climate change will affect the following natural resource elements.

- Hydrologic regime, water temperature, water chemistry, sediment, stream habitat quality, and rare aquatic species in the water bodies on and adjacent to Eglin AFB
- Hydrology (and vegetation and fire susceptibility) of RFS ponds and adjacent uplands
- Amount and proportion of beach habitat for nesting sea turtles, Santa Rosa beach mice, piping plovers, snowy plovers, and Florida perforate lichen
- Habitat and food sources for gopher tortoises, indigo snakes, and black bears
- Growth rates and mortality of longleaf pine
- Regeneration and restoration of longleaf pine
- Wildfires and prescribed fires
- Spread of invasive non-native plant and animal species
- Threat of erosion

Below is a list of general adaptation approaches for natural resource management at Eglin AFB in response to climate change.

1. Reduce the impacts of current stressors to enhance ecosystem resilience to climate change in the near term. Current stressors include altered fire regimes (unnatural and dangerous fuel loads, presence of off-site species), invasive species, altered hydrology, and others.
2. Maximize unfragmented patches of ecological systems, including within ecosystem topographic and hydrologic variability, functional ecological processes, and landscape patterns of ecological systems.
3. Encourage the land management of natural vegetation in areas of potential inland migration by the use of prescribed fire and invasive species control. Dense vegetation and invasive species may interfere with the inland migration of marsh vegetation.
4. Monitor trends in ecological systems to assess patterns of restoration and changes in reference conditions, especially longleaf pine regeneration and ground cover responses. Use the dynamic reference condition approach to assess changes over time.

The ecosystem effects of climate change will likely be incremental and challenging to distinguish and assess. Assessing potential impacts should rely on models to plan for probable complex and indirect changes. Addressing impacts to protected species and species of concern from global climate changes and addressing them with modifications to natural resources management strategies will require an adaptive process of developing, validating and improving models in the creation of forecasts needed for management.

Identifying and adapting to the likely effects of climate change calls for a proactive rather than reactive approach to maintain cost effective programs and meet legal requirements to manage natural resources. Collaboration with natural resources agencies will increase synergy and cooperation, leading to a successful

result for all stakeholders. Using these management strategies will help foster an ecosystem approach that considers and addresses the impacts of climate change within INRMPs.

7.17 Geographic Information Systems

Applicability Statement

This section applies to all USAF installations that maintain an INRMP, since all geospatial information must be maintained within the USAF GeoBase system. Eglin AFB **IS** required to implement this element.

Program Overview/Current Management Practices

7.17.1 Natural Resources Section GIS and Decision Support Systems

Adaptive management involves the collection, analysis, and synthesis of large and complex datasets and the incorporation of this information into the decision-making process. To accomplish this, NR synthesizes monitoring and research data into an integrated enterprise geospatial database. Eglin NRS use spatial modeling tools to help integrate different management objectives across the Eglin AFB landscape. Recent advances in software and technology have facilitated the modeling process, enabling real-time spatially explicit information to be simultaneously analyzed and displayed to make informed management decisions.

One such decision support model is being used through the AFWFB. This decision support model influences where and under what conditions prescribed fire will be applied to the Eglin AFB landscape. The model is a method of integrating and balancing management objectives for all natural resources on Eglin AFB and potentially across the surrounding landscape as well. Ultimately, such ecosystem management tools will assist other DoD installations with similar management challenges.

7.17.2 Eglin GeoBase Plan

This DSS will be consistent with the Eglin GeoBase Strategic Plan (EGSP). The purpose of the EGSP is to attain and sustain an enterprise geospatial capability, enabling efficient use of trusted and integrated information, services, and solutions. This plan has an organizational structure to facilitate the development and sharing of data across functional areas. This system will give NR a means of coordinating and organizing geospatial data collection efforts. The result will be an enterprise database system, accessible throughout the Eglin Complex, enabling information to be shared between work processes.

The NR DSS (single node) database network will facilitate data sharing of the most up-to-date information. This system will provide direct ownership of information. Information exchange with Eglin's TW will occur through auto-updates at night or on weekends for modified features. This will minimize delays between actions and reports. The architecture of the EGSP will also allow multiple users to share data (from one platform) simultaneously, providing multi-dimensional analyses in a near real time cycle.

This plan will facilitate the collection and use of information across the entire Eglin AFB complex, therefore reducing duplicate resource expenditures of same or similar data sets. Under the GeoBase initiative, GIS will be based on an enterprise architecture with wide flexibility in the tools available to the end-user. This will significantly reduce the number of individual software licenses needed, while enabling a greater number of users. It will subsequently result in greater access to data and ease of GIS analysis through user-friendly desktop and Internet-based software.

7.17.3 GeoIntegration Office

Following policy established in AFI 32-10112 (Installation Geospatial Information and Services), the GeoIntegration Office (GIO) is established and maintained by the Installation Commander (96 TW/CC). Technical direction is provided by the Civil Engineering Commander. The GIO is currently in the Technical Support Section of CE's Program Management Division.

The GIO will guide the operational development and implementation of the GIS technology and applications within Eglin AFB. NR has been a leader in the development of Eglin AFB's GIS and will continue to participate with the GIO as they continue to

- provide a standard yet agile geospatial data management program;
- ensure data is of high quality;
- maintain and refine an enterprise database architecture;
- program to obtain and sustain adequate resources to provide stable products and services; and
- promote awareness of capabilities and collaboration on policy and guidance.

7.17.4 Data Standards

NR maintains its GIS according to DoD requirements developed and implemented by the National Spatial Data Infrastructure, the Spatial Data Standards for Facilities, Infrastructure, and Environment, and the Federal Geographic Data Committee (FGDC). A GIS meta-database is maintained by members of the GIS Working Group that contains comprehensive information on each GIS feature. Prior to transferring GIS files into the enterprise database system, each data owner or responsible individual ensures valid, clean geometries and updates the GIS meta-database records associated with the centralized files. Any updated information to these features following entry into the enterprise database system is documented. The updated information will contain (at a minimum) a brief description and the new date of any changes between old and new versions in the meta-database. The meta-database entries will follow FGDC standards.

8.0 MANAGEMENT GOALS AND OBJECTIVES

The installation establishes long term, expansive goals and supporting objectives to manage and protect natural resources while supporting the military mission. Goals express a vision for a desired condition for the installation's natural resources and are the primary focal points for INRMP implementation. Objectives indicate a management initiative or strategy for specific long or medium range outcomes and are supported by projects. Projects are specific actions that can be accomplished within a single year. Also, in cases where off-installation land use may jeopardize USAF missions, this section may list specific goals and objectives aimed at eliminating, reducing, or mitigating the effects of encroachment on military missions. These natural resources management goals for the future have been formulated by the preparers of the INRMP from an assessment of the natural resources, current condition of those resources, mission requirements, and management issues previously identified. Below are the integrated goals for the entire natural resources program.

The installation goals and objectives are displayed in the 'Installation Supplement' section below in a format that facilitates an integrated approach to natural resource management. By using this approach, measurable objectives can be used to assess the attainment of goals. Individual work tasks support INRMP objectives. The projects are key elements of the annual work plans and are programmed into the conservation budget, as applicable.

Installation Supplement—Management Goals and Objective

GOAL 1 PROVIDE DIRECT SUPPORT AND NATURAL RESOURCES COORDINATION SERVICES TO EGLIN AFB BY PLANNING FOR AND ADAPTING TO A RAPIDLY CHANGING MILITARY MISSION

Objective 1.1 Support military mission objectives through a proactive and responsive natural resources analysis and consultation process.

Project 1.1.1 Annually coordinate with environmental impact analysis working group members, and RC3 to improve the EIAP, including design and distribution of environmental requirements through methods such as the AF Form 813, CSE, and guidebooks.

Project 1.1.2 Maintain a compliance program to implement and monitor required relevant natural resources terms and conditions and conservation measures from ESA Section 7 consultations, MMPA consultations, NEPA analyses, and other applicable regulatory permits, and provide annual reports to the appropriate regulators.

Project 1.1.3 Annually review 100 percent of submitted Air Force Form 813s, Environmental Assessments (EAs), and EISs for natural resources concerns, attend meetings/site visits, and provide comments to EIAP.

Project 1.1.4 Annually develop CZMA determinations and conduct USFWS/NMFS/MMPA Section 7 consultations as required to support Eglin AFB missions and operations.

Objective 1.2 Support near-term military mission objectives by contributing natural resources management expertise to decision makers to inform a proactive planning process.

Project 1.2.1 Annually obtain updated geospatial data on range user assets in compliance with the Eglin GeoBase Strategic Plan.

Project 1.2.2 Support Flight Safety and Airfield Management objectives by advising and coordinating on airfield management actions, assisting with obtaining

permits, and responding to emergency wildlife (BASH) situations, as needed.

Project 1.2.3 Protect valuable range/mission assets by conducting nuisance animal removal efforts in emergency response situations. Support the 96 CEG/CEOIUE, as needed.

Objective 1.3 Ensure long-term range availability, sustainability, and resilience for the military mission through effective natural resources management, coordination, and communication.

Project 1.3.1 Annually ensure access to the EGTTR for mission activities by utilizing the mission assessment decision matrix, communicating frequently with proponents and regulators, and completing IHA and LOA applications and BAs.

Project 1.3.2 Maintain annual coordination with base contracting, real estate, and relevant CEG organizations to ensure that requirements from Section 7 consultations, EISs, EAs, and other applicable regulatory permits are included in price estimates for construction and road projects and included in contracts.

Project 1.3.3 Ensure the compatibility of recreation areas and MUs with the short- and long-term requirements of the military mission through at least annual coordination with and approval by the OAC. Complete OAC planning cycle by 30 June annually.

Project 1.3.4 Annually provide guidance, direction and oversight for the implementation of REPI-funded RFS recovery efforts at Escribano Point WMA.

Project 1.3.5 Assist with prescribed fires and other habitat improvement measures to grow the RFS population at Escribano Point WMA, and to aid achievement of the recovery criteria as listed in the recovery plan.

Project 1.3.6 Conduct a five-year revision/update of the Eglin AFB INRMP and obtain USFWS and FWC signatures by 15 August 2022.

Project 1.3.7 Annually review all INRMP component plans, appendices, and tabs and update or reformat as needed. By 2024, update, revise, and reformat the T&E and Recreation CPs.

Project 1.3.8 Annually hold a forum to ensure 96 CEG road development/repair, fire, forestry, and wildlife management actions do not contribute to a net gain of invasive non-native plants species on Eglin AFB.

Objective 1.4 Provide for effective resource conservation and protection through enforcement of natural resources laws and public use outdoor recreation rules and regulations.

Project 1.4.1 Partner with 96 SFS, Eglin Legal Office, 96 TW Range Group, and the Eglin Installation Support Section to maintain (and expand as public use and security demands dictate) existing CLEP utilizing standard FWC patrols and USFWS CLEO personnel to bolster 96 SFS enforcement efforts.

Project 1.4.2 Annually brief base leadership, coordinate with the OAC working group, and report results of CLEP to the TW/CC.

GOAL 2 ENABLE LONG TERM SUSTAINABILITY OF EGLIN AFB ENVIRONMENTS FOR MILITARY TESTING/TRAINING BY PROTECTING, SUSTAINING, AND

MONITORING RARE AND PROTECTED SPECIES ACROSS THE INSTALLATION.

Objective 2.1 By 2022, accomplish TSI sand pine removal in areas that are not commercially viable within 0.5 mile of east side RCW designated foraging habitat

Project 2.1.1 By 2022, establish a 30-acre native seed orchard utilizing up to five selected species native to Eglin AFB

Project 2.1.2 Annually plant a minimum of 80 acres of native groundcover either by direct-seeding or containerized plugs.

Project 2.1.3 Conduct long-term suppression of invasive species in priority areas of the CCA to reduce impacts to natural resources. Provide rapid response to protect high value habitat and/or resources, as needed.

Project 2.1.4 Annually assess longleaf plantations needed for ecological restoration where the understory and planted longleaf display low vigor.

Objective 2.2 Recover and monitor RCWs in accordance with federal law and in support of mission flexibility.

Project 2.2.1 Annually drill artificial cavities in 350 active clusters in the western subpopulation that contain less than three suitable cavities and in all active clusters in the eastern subpopulation that contain less than four suitable cavities

Project 2.2.2 Annually conduct tree checks on all active RCW clusters and inactive recruitment clusters.

Project 2.2.3 Annually confirm minimum of 450 potential breeding groups by completing nest checks on 20 percent of west side groups and 33 percent of east side groups and conducting early morning group follows only in groups where no nests are located. Most recent status for each group will be used during the annual count.

Project 2.2.4 Annually evaluate the boundaries of the CCA and use the CCA to prioritize restoration activities in longleaf pine habitats across Eglin AFB.

Objective 2.3 Protect, monitor, and restore RFS and their habitats in accordance with federal law.

Project 2.3.1 Conduct annual sampling of all historically occupied RFS breeding ponds (if ponds fill) for salamander larvae and 25 percent of potential ponds to understand population trends and locate new populations.

Project 2.3.2 Maintain a minimum three-year average fire return interval in all historically occupied RFS breeding ponds and a subset of suitable non-historically occupied ponds within the East Bay Flatwoods and Oglesby/Alligator Creek areas. Monitor burn success using an in-pond walk-through within one month of each burn. Prioritize ponds for growing season basin burnout when desired prescribed fire effects do not occur in breeding ponds during burns targeting the surrounded flatwoods uplands. Use mechanical removal of stems combined with herbicide application to reduce woody canopy cover and midstory within at least 2 prioritized RFS wetlands annually; mechanically disturb duff and/or peat (raking) to increase egg laying and larval habitat (as needed) in select areas of at least one high priority pond annually.

Project 2.3.3 Work with Fire and Forest Management to identify areas for upland overstory basal area reduction surrounding RFS breeding ponds.

Project 2.3.4 Monitor public access and nuisance wildlife control structures in RFS habitat. Fix structures as needed and monitor success (vehicle/nuisance wildlife exclusion) annually.

Project 2.3.5 Directly control invasive non-native plant and animal (feral hog) species in RFS habitat. Invasive non-native plant and animal surveys will be conducted during annual dip net surveys. Breeding ponds not surveyed annually will be surveyed for invasive non-native species on a five-year interval. Known locations of invasive non-native plant species will be treated, focusing on restoring native plant communities in unoccupied ponds. Annually ensure personnel availability to rapidly respond to invasive plant and animal incursion

Project 2.3.6 For decision and mission support, monthly monitor water levels at all historically occupied ponds; annually maintain and monitor at least one drift fence to confirm and track timing of RFS adult/metamorph movement on landscape. During dry years when breeding wetlands are inundated by January or February, use egg-searching to track viability of eggs, which can inform timing of prescribed fire and necessity of additional monitoring.

Project 2.3.7 To better understand population dynamics for species recovery and ultimately mission support, collect genetic samples from regenerative tissues of adults and metamorphs at drift fences and from larvae at all ponds.

Project 2.3.8 Use artificial ponds (e.g., cattle tanks) as a way to increase larval survival or for short-term rescue during periods of extreme weather (e.g., drought, heavy rain events), while investigating this practice as a means to potentially repatriate RFSs to historic sites that no longer contain an extant population.

Project 2.3.9 Annually evaluate suitable site(s) among both historically occupied-but-extirpated and not historically occupied wetlands, and release either larvae or subadult/metamorph individuals into habitats in an attempt to enhance the RFS resiliency, redundancy, and representation via repatriation on Eglin AFB; obtain genetic regenerative tissue samples (and, when possible, mark) and release late-stage larvae or metamorphs by placing them in suitable habitat (for metamorphs, near edge of wetland on a damp night); install and monitor two drift fences at translocation ponds if and after yearly translocations are made.

Objective 2.4 Protect Eastern indigo snakes and their habitats IAW federal law and prepare for the potential federal listing of the gopher tortoise and anticipated listing of alligator snapping turtle.

Project 2.4.1 Ensure that 100 percent of proposed Project areas identified by the EIAP where ground will be significantly disturbed are surveyed for gopher tortoises, eastern indigo snakes, and other sensitive commensals (in-house or by contract). Tortoises that cannot be avoided will be relocated.

Project 2.4.2 Conduct annual monitoring of GT populations to ensure long-term viability, IAW FWS permitting and CCA guidelines. Document signs of at-risk burrow commensals, including the eastern indigo snake.

Project 2.4.3 Implement drift fence/camera trap surveys to document presence of eastern indigo snakes. Select sites with historic eastern indigo snake occurrence.

Project 2.4.4 IAW GT PCO and FWC MOA, establish and maintain at least three Minimum Viable Populations (MVP) of gopher tortoises (outside airfield, cantonment, and test area environments) per year, with an ultimate goal of

18 MVPs in the CCA. Use a variety of sources for establishing viable populations, including source populations located off the installation.

Project 2.4.5 Ensure coordination annually, and as needed, between all natural resource sections to plan timing and location of prescribed burns and/or silvicultural activities for gopher tortoise pre-release habitat improvement, vegetative fuels reduction ahead of new soft release pen installation, and for post-release habitat management.

Project 2.4.6 By April of 2023 meet with USFWS and FWC to discuss feasibility of eastern indigo snake repatriation to Eglin AFB as a contribution toward delisting of the species.

Project 2.4.7 Develop a monitoring program for alligator snapping turtle to generate distribution, population, and trend data and management data for Biological Assessments.

Objective 2.5 Enable long term sustainability of barrier island environments for military testing/training by protecting, maintaining, and monitoring T&E species and their habitats.

Project 2.5.1 Annually locate, protect, and evaluate 100 percent of sea turtle nests on Air Force property at CSB and SRI. Collect and maintain data on nest success, depredation, and disorientation for all nests.

Project 2.5.2 Respond to, and investigate, 100 percent of sea turtle and marine mammal stranding reports on Air Force property. Collect appropriate data and report to the stranding and salvage network; contact within 24 hours of investigating the report.

Project 2.5.3 Conduct shorebird transect surveys monthly (July – May) at SRI and CSB to identify important habitat areas for protection and to determine population trends.

Project 2.5.4 Conduct shorebird nesting surveys at SRI for least terns, snowy plovers, and black skimmers from March through July to locate and protect nests from the public and/or other activities that may disturb or destroy nests.

Project 2.5.5 Monitor the Florida perforate lichen populations according to the schedule and protocol set forth in the T&E Plan.

Project 2.5.6 Develop a hurricane response plan for lichen populations at risk of storm surge overwash to plan for and anticipate increasing frequency and severity of tropical cyclones.

Project 2.5.7 Quarterly conduct tracking tube surveys for the Santa Rosa beach mouse using 10 transects for population density and trends.

Project 2.5.8 Establish one tracking tube transect at CSB and run every other month, every year, to detect St. Andrews beach mouse.

Project 2.5.9 Annually monitor predator activity on SRI and CSB and follow up with predator control efforts if required. Provide predator control support to SRI and CSB during sea turtle nesting season when needed.

Project 2.5.10 Annually maintain signs and exclusionary fencing for protected species and habitats at SRI and CSB.

Project 2.5.11 Prioritize law enforcement and compliance checks on weekends and holidays for SRI during each shorebird nesting season

Objective 2.6 Restore Okaloosa darter habitat and monitor populations in support of darter delisting.

Project 2.6.1 Annually monitor the Okaloosa darter populations and stream habitat according to the recovery plan and the post de-listing monitoring plan.

Project 2.6.2 Rehabilitate the last five known soil erosion sites that have the potential to impact Okaloosa darter habitat by 2027.

Project 2.6.3 Restore the last two known fish passage barriers (C-74 pond and College Pond) in Okaloosa darter drainages as funding allows.

Project 2.6.4 By 2025, evaluate techniques and develop long-term strategy to reduce woody vegetation encroachment in near-stream riparian zones of known Okaloosa darter habitat with prescribed fire and/or chemical and mechanical methods.

Objective 2.7 Minimize or eliminate threats to Gulf Sturgeon and freshwater mussel habitats and monitor populations potentially affected by Eglin AFB missions.

Project 2.7.1 Identify and rehabilitate the last 15 known soil erosion sites that have the potential to impact Gulf sturgeon and mussel habitat by 2023.

Project 2.7.2 Annually monitor Gulf sturgeon numbers and movements in marine, estuarine, and riverine areas in and around Eglin AFB, either through deployment of Eglin AFB's receivers or by leveraging partnerships with agencies/universities to obtain data from similar studies being conducted around Eglin AFB.

Project 2.7.3 Annually analyze data and assess potential impacts to Gulf sturgeon from Air Force missions and/or construction using data collected from studies being conducted in Gulf sturgeon habitat areas around Eglin AFB, to include population trends, movement and behavioral patterns, and identification of specific areas of interest for further investigation.

Project 2.7.4 By 2023, develop and implement a mussel monitoring plan for protected mussels found in portions of the Yellow and Shoal Rivers adjacent to Eglin AFB.

Project 2.7.5 Use mussel monitoring data to develop models which assess population trends and identify important riverine habitat by 2023.

Objective 2.8 Restore and monitor wetland and aquatic habitats for rare wetland species breeding.

Project 2.8.1 Survey no less than 70 sites for Florida bog frogs, with three visits to each site.

Project 2.8.2 Annually prioritize at least five riparian and/or ephemeral wetland areas for treatment using a combination of prescribed fire, chemical and mechanical removal to reduce midstory encroachment as a means to improve habitat for gopher frog, Florida bog frog and/or eastern indigo snake.

GOAL 3 SUSTAIN HABITAT INTEGRITY, FUNCTIONALITY, AND PRODUCTIVITY BY MANAGING INVASIVE PLANTS AND ANIMALS, CONTINUING A ROBUST AND

NATION-LEADING FIRE PROGRAM, AND MAINTAINING A HIGHLY PRODUCTIVE AND EFFECTIVE FORESTRY PROGRAM.

Objective 3.1 Implement the Invasive Non-Native Wildlife, Feral Animals, and Nuisance Native Wildlife Component Plan to control invasive plants and animals.

Project 3.1.1 Maintain invasive plant control efforts in concert with fire management and by using herbicide and non-chemical treatments. Efforts should focus on Category I and II species.

Project 3.1.2 Evaluate the need for a comprehensive base-wide survey to document invasive plant infestations and search for species that could potentially arrive and establish in the next 5-10 years. Determine an appropriate interval for a regularly re-occurring base-wide survey, and ensure that effective early detection, rapid response (EDRR) protocols are in place for newly arrived infestations.

Project 3.1.3 As part of the EDRR protocols developed in Project (3.1.2) minimize impacts from invasive non-native plant and animal species in RFS habitat by implementing an early detection/rapid response protocol. Annually ensure personnel availability to rapidly respond to invasive plant and animal incursions.

Project 3.1.4 Conduct long-term suppression of invasive species in priority areas to protect valuable range/mission assets and reduce impacts to sensitive species habitat.

Project 3.1.5 Annually survey and treat a minimum of 33 percent of high-quality natural areas within one mile of the urban interface for INS.

Objective 3.2 Enhance military mission capability and long-term range sustainment on Eglin AFB through an adaptive wildland fire program that minimizes risk from wildfires, enhances ecosystem resilience through science-based application of prescribed fire, and provides key fire related information to decision makers while continuing to lead the nation in wildland fire management and training.

Project 3.2.1 Safely and professionally suppress all wildfires on Eglin AFB with no lost-time firefighter injuries and no loss of Eglin AFB real property.

Project 3.2.2 Treat at least 90,000 acres with a combination of prescribed fire and wildfires managed for resource benefit annually, based on a five-year running average, using the burn prioritization model to identify key areas for fire. To count towards annual acres, wildfires must be managed intentionally for resource benefit and must meet objectives established in the prescribed fire plan.

Project 3.2.3 Annually coordinate wildfire response procedures with EFES and local fire departments as needed, through joint training exercises, written standard operating procedures, and through groups such as the Urban Task Force and Base Emergency Responders Planning Committee.

Project 3.2.4 Ensure no net loss of wildland fire management capacity at Eglin AFB while standing up AFCEC Wildland Fire Branch.

Project 3.2.5 Continue to build Unmanned Aerial Vehicle/Unmanned Aerial System capacity within the Eglin WSM to support monitoring and aerial ignition capabilities through building partnerships and training personnel.

Project 3.2.6 Annually update suppression considerations map of range, environmental, and cultural assets vulnerable to fire, coordinated with natural and cultural

resource managers, Range Chiefs, interstitial training groups, and other pertinent range users.

Project 3.2.7 Through a responsive planning process, ensure minimal interference with military mission activity by conducting 100 percent of prescribed burns on Eglin AFB without causing mission delays.

Project 3.2.8 Minimize mission delays and lost range space utilization due to wildfires by burning the most heavily used mission test/training areas on Eglin AFB ahead of scheduled hot missions and/or standing by on-site for missions, as requested, to facilitate rapid wildfire response.

Project 3.2.9 By 2022, develop internal capacity for non-fire, installation NR managers and cooperators (i.e., Virginia Tech) to conduct small, wetland prescribed burns (RFS basins, Florida bog frog stream segments, etc.) as NWCG RXB3 with minimal support and oversight from RXB2-qualified burn bosses on the Eglin WSM.

Objective 3.3 Maintain a minimum three-year average fire return interval in all historically occupied RFS breeding ponds and a subset of suitable non-historically occupied ponds within the East Bay Flatwoods and Oglesby/Alligator Creek areas. Monitor burn success using an in-pond walk-through within one month of each burn. Prioritize ponds for growing season basin burnout when desired prescribed fire effects do not occur in breeding ponds during burns targeting the surrounded Restore and sustain the longleaf pine ecosystem and generate revenue for the NR program through sound forestry management.

Project 3.3.1 Annually conduct forest inventory of a minimum of 10 percent of the interstitial area as needed for mission related decision support.

Project 3.3.2 Annually prioritize and manage longleaf pine habitat within the CCA to maintain and restore the longleaf pine ecosystem and associated species to increase ecosystem resiliency and military mission flexibility

Project 3.3.3 Accomplish all commercial sand pine harvest in 90 percent of east side RCW clusters by 2024 and all remaining clusters by 2025.

Project 3.3.4 By 2024, accomplish TSI sand pine removal in areas that are not commercially viable within 0.5 mile of east side RCW designated foraging habitat.

Project 3.3.5 Annually assess longleaf plantations needed for ecological restoration where the understory and planted longleaf display low vigor.

Project 3.3.6 Annually update the five-year business plan utilizing new forest inventory for producing approximately 1 million dollars annually from the timber management program.

Project 3.3.7 Annually establish a minimum of 60,000 pine seedlings outside of the CCA to ensure a consistent revenue stream for future restoration activities.

Objective 3.4 Protect and maintain existing areas that are important to biodiversity conservation and monitor rare species when efforts will not conflict with mission priorities.

Project 3.4.1 As needed, coordinate and review specific management and restoration activities in areas identified as ONAs, SBSs, and High-Quality Natural Communities.

Objective 3.5 Maintain an integrated adaptive management by using field-based and remotely sensed monitoring methods to detect changes in natural resources and numbers of

protected species due to changing climate such as an increasing temperature, sea level rise.

Project 3.5.1 By 2024, document trends in the longleaf pine habitat within the CCA on Eglin AFB using the ECM, and prioritize management based on these trends.

Project 3.5.2 Biennially use the ECM to determine rates of restoration for the longleaf pine sandhills communities on the eastern side of the Eglin Reservation and incorporate results to prioritize management activities. Input into the Eglin Enterprise Spatial Database by December 2024.

Project 3.5.3 Annually identify areas for conserving longleaf regeneration. Prioritize activities in areas to promote advanced regeneration.

Project 3.5.4 Annually designate "regeneration emphasis areas" and input into forestry concerns map for prescribed fire scheduling.

GOAL 4 RESTORE, PROTECT, AND MONITOR AQUATIC HABITATS AND WATERSHEDS TO COMPLY WITH FEDERAL LAW AND MAXIMIZE MISSION ACCESS AND FLEXIBILITY.

Objective 4.1 Restore and monitor wetland and aquatic habitats for, ecosystem health and compliance with the Clean Water Act.

Project 4.1.1 By 2023, identify, prioritize, and rehabilitate up to 20 soil erosion sites in wetland riparian areas subject to a CWA notice of violation.

Project 4.1.2 Annually maintain rehabilitated erosion sites upon completion (including those for Okaloosa darter and Gulf sturgeon projects) for a minimum of three to five years and then as-needed thereafter to prevent loss of structural integrity.

Project 4.1.3 Annually monitor water quality at 15 sites using biological, chemical, and physical habitat assessments in Eglin AFB tributaries to the Yellow and Shoal Rivers.

Project 4.1.4 Annually inspect Eglin AFB boat landing sites for structural deterioration, erosion, and bank stability.

Project 4.1.5 Complete two Yellow Riverbank stabilization projects in coordination with AHRES and NRDA by 2025.

Project 4.1.6 Consider/Develop access restrictions to prevent damage to sensitive wetland areas from erosion in the East Bay Flatwoods area caused by off-road driving by the public.

GOAL 5 PROVIDE A VARIETY OF USE, VALUES, PRODUCTS, AND SERVICES TO PRESENT AND FUTURE GENERATIONS WHILE MAINTAINING SUSTAINABLE ECOSYSTEMS.

Objective 5.1 Provide hunting and fishing opportunities for the public consistent with demand, quality, and cost within the constraints of the Air Force mission.

Project 5.1.1 Annually employ game check stations to collect biological, harvest, and hunting pressure data from specific Management Units (MUs) (Brier Creek and Jackson). Use data collected to make informed management decisions and ensure sustainable yield.

Project 5.1.2 Use herbicide and prescribed fire to control undesirable woody vegetation in the quail management emphasis area as needed.

Project 5.1.3 Annually host four high quality special opportunity public hunting events, specifically targeting youth and mobility-impaired participants.

Project 5.1.4 Manage three water bodies (Anderson, Indigo, and Duck ponds) for high intensity recreational fishing through the use of a supplemental feeding and stocking program. Annually host two-day youth fishing event at Anderson Pond.

Project 5.1.5 Develop policy and annual installation-specific hunting and fishing rule and regulation product to maximize recreational opportunities in a manner compatible with the military mission.

Project 5.1.6 Annually maintain approximately 100 acres of established public dove fields and consider establishing additional dove fields across the reservation as logistics and resources allow. Annually coordinate with Forestry Section to identify potential short-term dove hunting opportunities consistent with reforestation efforts (e.g., site prep areas).

Project 5.1.7 By 2024 develop and implement a plan to improve the Hwy 87 primitive boat ramp to protect against structural deterioration and erosion, and to improve bank stability, ramp capacity, and function (seek statewide partners to assist with funding, design, etc.).

Project 5.1.8 By 2023 replace the water control structure that maintains Jr. Walton Pond as an impoundment and fix associated damage to RR211 to restore vehicular access.

Project 5.1.9 By 2024, develop and implement public trapping opportunities to supplement ongoing feral hog control efforts/program.

Project 5.1.10 Monitor trends in game species populations as necessary using a combination of harvest data, track counts, spotlight surveys, and call count transects, following established protocols.

Objective 5.2 Provide the public with non-consumptive recreation opportunities consistent with demand, quality, and cost within the constraints of the Air Force mission.

Project 5.2.1 Annually manage 14 primitive campground sites and 17-day use areas at current levels of service to include mowing and replacing picnic tables and fire rings as needed and evaluating garbage clean-up schedules. Review permit sales data to determine levels of utilization and appropriate alterations to maintenance schedules.

Project 5.2.2 Annually inspect existing designated Mountain Bike Areas (MBAs) to stem unauthorized creation of new trails. Update MBA trail maps as necessary and provide at NRS, online at eglin.iSportsman.net, and through the Avenza Maps application.

Project 5.2.3 Annually maintain 18-hole disc golf course located within the Anderson Pond Recreation Area.

Project 5.2.4 Coordinate annually with FNST and FTA contacts regarding access to and maintenance of the portions of the FNST within Eglin AFB.

Project 5.2.5 Work with USFS to advance planning and generate support to connect Eglin AFB and non-Eglin sections of the FNST via construction of a bridge spanning the Yellow River by 2025.

Objective 5.3 Provide information and opportunities to the public pertaining to Eglin AFB's natural resource management in support of the military mission.

Project 5.3.1 Annually coordinate with Eglin Official Bulletin staff or similar public relations outlets to advertise outdoor recreation opportunities across the reservation. Additionally, as needed, develop and disseminate through the NRS and online informational brochures highlighting unique recreational, hunting, and fishing opportunities on Eglin AFB.

Project 5.3.2 Use an average of 7,000 volunteer hours annually to enhance conservation effectiveness.

9.0 INRMP IMPLEMENTATION, UPDATE, AND REVISION PROCESS

9.1 Natural Resources Management Staffing and Implementation

Eglin AFB's goals, objectives, and projects (Section 8) are primarily carried out as duties and responsibilities of the Natural Resources Chief, as relayed to the Natural Resources staff. When possible, other organizations, contractors, and volunteers are used to supplement Natural Resources staff efforts. Efforts beyond the capabilities of the installation are carried forward as projects to AFCEC for inclusion in the five-year budget review. Current program staffing is provided below.

- NH-03 Natural Resources Administrator (Chief)
- NH-03 Supervisory Forester
- NH-03 Supervisory Wildlife Biologist
- GS-12 T&E Species Biologist (two)
- GS-12 Wildlife Biologist
- GS-11 T&E Species Biologist (two)
- GS-12 Reforestation Forester
- GS-11 Forester
- GS-09 Forestry Technician (two)
- GS-09 Pre-sales Forester
- GS-09 Soil Conservation Technician
- GS-08 Forestry Technician (one)
- GS-07 Forestry Technician (two)
- GS-07 Wildlife Technician (one)
- GS-06 Forestry Technician (BRAC Firefighters) (four)

As of 2020, Eglin AFB has 22 government positions. The program also use 31 contract person-years, four person-years of non-appropriated fund labor, and four person-years of volunteer help. In 2013, the USAF transitioned the Fire program under AFCEC/CZO. While these employees still work at the NR building and conduct prescribed burning and wildfire suppression activities, they are no longer considered Eglin AFB employees; however, since they continue to carry out management on Eglin AFB towards achieving goals and objectives of the INRMP, their numbers will count towards manpower to implement the INRMP. The Eglin WSM is currently authorized for seven positions, but currently only six of those positions are filled. Thus, the grand total work force for the natural resources program in 2017 is approximately 66 person-years (Table 9-1)

To fully implement the goals and objectives of this INRMP and be able to adjust to significant changes in the Eglin AFB mission (in terms of types, tempo, and extent), additional resources beyond the capabilities of the current staff are needed, as outlined in Table 9-1. Given the size of Eglin AFB, the changing mission, and the complexities of natural resource management, the staffing deficiencies hindering INRMP implementation demand additional analysis. Analyses of labor, cost of the program, and amount of income from forestry and recreation receipts for the current Natural Resource program compared to the desired future program reveal a deficit of seven man years. Requests are dependent on the availability of base resources, AFCEC resources/expertise, funding, and civilian volunteers.

The 96 CEG/CEIE Environmental Management Branch is responsible for the planning and implementation of the INRMP. Eglin NRS is responsible for coordination of the INRMP. The Chief of NR is responsible for tracking its implementation. This is accomplished through special INRMP coordination meetings. Other evaluation mechanisms exist through the Environment, Safety, and Occupational Health Compliance Assessment and Management Program.

Table 9-1. Breakdown of labor for Natural Resources.

2017 Program (Person-Years)		**Desired Future Program (Person-Years)**	
Non-Appropriated Funds (NAF)	4	NAF	5
Government *	27	Government *	28
Contractor	31	Contractor*	36
Volunteer	4	Volunteer	4
TOTAL	**66**	**TOTAL**	**73**

* Includes Eglin Wildland Support Module.

INRMP implementation includes, but is not limited to, the following.

- Execute all "must fund" projects and activities in accordance with specific timeframes identified in the INRMP.
- Ensure sufficient professionally trained natural resources management personnel are available to perform the tasks required by the INRMP.
- Review the INRMP annually, update goals and objectives, and coordinate changes with regulators, as appropriate.
- Document specific INRMP accomplishments undertaken each year.

Supporting plans and organizations each have their own authority for budgeting and implementation. The Natural Resources Program Manager has the responsibility to review, provide input, and recommend changes to plans so they further the goals and objectives of the Eglin AFB INRMP. Overall implementation responsibility remains with the Installation Commander.

9.2 Monitoring INRMP Implementation

The Sikes Act requires each installation with significant natural resources to report annually on the status of its INRMP implementation. Natural resources conservation metrics are used to assess the overall health and trends of each installation's natural resources program and to identify and correct potential funding and other resource shortfalls. The annual review will serve to: review completed projects, evaluate effectiveness, determine funding needs, set goals for the future, and demonstrate the importance of Eglin AFB's INRMP activities in supporting the long-term sustainability of Eglin AFB's military mission. Eglin's NRMs will review these sections at each INRMP Review Cycle and the Chief of Natural Resources will enforce compliance with the INRMP.

NR personnel evaluate progress and determine future direction for various natural resources activities as needed throughout the year, but INRMP implementation primarily is monitored through the annual review of Objectives and Projects in Section 8 and Annual Work Plans in Section 10. Throughout the year, multiple coordination meetings are held within and among the Wildlife, Fire, and Forest Management sections, with alterations to management activities as needed based on progress towards desired future conditions. Various rare and protected species and habitat monitoring programs provide data to evaluate success in meeting INRMP objectives and accomplishing projects. Such programs include the ecological monitoring program, feral hog monitoring in sensitive habitats, and monitoring of various species, including sea turtles, RCWs, RFSs, Okaloosa darters, Gulf sturgeon, freshwater mussels, gopher tortoises, burrowing owls, and bog frogs. Monitoring reviews facilitate "adaptive management" by providing an opportunity for Eglin AFB to review and evaluate activities and make adjustments as necessary.

9.2.1 Ecological Monitoring Efforts

To ensure that conservation goals are being met, Eglin NRS managers rely on a mature ecological monitoring program to provide statistically rigorous trends of managed ecosystems. The monitoring program continues to leverage GIS and remote sensing technologies to reduce costs for future rare and protected species and biodiversity monitoring. These GIS products have become essential metrics for reporting the trends of NR to base commanders. Furthermore, monitoring provides the only defensible method for evaluating the cumulative impacts of interstitial range use, as Eglin AFB has baseline data for nearly a decade prior to the expected 300-fold increase of training missions over the next five years.

Another perspective for understating the role of the Ecological Monitoring Program is that it provides operational risk management (ORM) to the Natural Resource Management Program. ORM is a proactive method of decision-making that anticipates outcomes and analyzes data to determine if actions met objectives or led to unintended consequences. In this way, ecological monitoring enhances military mission flexibility and success by supporting the Eglin AFB NR adaptive management efforts through statistically sound, scientifically-based monitoring of community conservation targets.

Ecological monitoring supports adaptive management by informing managers of community change resulting from management actions. If impacts are negative (e.g., loss or degradation of ecosystem function and processes), management practices can be altered. Alternatively, management actions that prove to have ecologically beneficial outcomes can be perpetuated. This iterative feedback loop, whereby monitoring can inform and affect management, is referred to as adaptive management.

To monitor the effects of fire and forest management on Eglin AFB's longleaf pine sandhill community, a series of permanent sampling points are used to follow changes before and after management actions. Within these plots, ecological indicators are used to assess the success or failure of the management action. Similarly, aquatic habitats are monitored for management-induced changes. Monitoring is crucial for assessing and abating immediate risk of management actions, and for allowing managers to apply conservation measures more efficiently across the landscape. In both uplands and aquatic environments, remote sensing is integrated into monitoring to increase sampling efficiency and provide accurate landscape-level perspectives. More information regarding the past, present, and future community monitoring efforts on Eglin AFB can be found in Tab 9—Ecological Monitoring Component Plan, while information regarding species-specific monitoring is found in Tab 8—Threatened and Endangered Species Component Plan.

The terrestrial monitoring program has developed a sampling methodology that captures the ecological effects of various management actions, including wildland fire, RCW habitat management, and other forest restoration activities, on Eglin AFB's longleaf pine communities. Monitoring change in ecological communities, especially communities that are actively managed for restoration, requires an understanding of complex gradients in site condition. The quality and condition of terrestrial communities vary considerably across Eglin AFB. The complex gradient of ecological condition on Eglin AFB is largely a result of historic management (especially fire and timber management). Great variation in environmental gradients including soil moisture, site productivity, and overstory density is found basewide. Monitoring and analysis of this gradient can reveal patterns of ecosystem response to current and past management actions.

To measure success, comparing degraded (restoration phase) sites to multiple reference (maintenance phase) sites, target trajectories for restoration activities and benchmarks for successful restoration can be established. The monitoring of change in these reference sites provides a robust framework for understanding what is possible for restoration efforts in light of future climate change and management constraints. The concurrent measurement of change in both restoration and reference sites to define restoration goals is called the dynamic reference approach. By comparing the distances that management actions move a community

along an established gradient from a given endpoint, one can assess the actions (e.g., fire vs. timber harvesting) that are most efficient in achieving management objectives. Moreover, different management actions are likely to be more efficient at different points along the gradient. Identifying these ecological condition benchmarks will aid in prioritizing management decisions.

Below is a brief summary of terrestrial monitoring efforts and stream/aquatic monitoring efforts. Full sampling protocols are found in Tab 9—Ecological Monitoring Component Plan.

9.2.2 Longleaf Pine Sandhills and Flatwoods

Longleaf pine sandhills and flatwoods communities are the focus of intensive terrestrial monitoring since these communities comprise more than 80 percent of the Eglin Reservation. These data are collected using the modified North Carolina Vegetation Survey methodology within 200 one-hectare plots. The plots were randomly located within three strata: 20 percent plots occur within longleaf reference conditions, 10 percent of the plots occur in flatwoods, and the remainder of the plots falls within Eglin AFB upland forest strata. Data from these plots have been sampled since 2001–2002, and plots are resampled one growing season following any agent of change, such as fire or forestry activities. Plots with no documented agent of change are resampled every five years. Under this sampling regime, each plot represents the current conditions of the Eglin AFB terrestrial forest types in which they occur.

Statistical trends have shown a general improvement of Eglin AFB landscape over the last decade, but sand pine recruitment into plots, particularly in the central and east portions of the reservation has increased. To date, these data have been utilized to reprioritize management efforts to combat the threat of sand pine reinvasion. In the absence of sand pine, however, monitoring analysis shows that biodiversity and understory vigor have responded to the increase in fire frequency despite high density of deciduous hardwoods in the mid-story (Hiers 2007). These analyses show that oak stem density is not as critical to ecosystem recovery as is the frequent consumption of litter from the forest floor. Fire prescriptions have been altered to reduce the focus on mid-story control with single fires and focus more on litter consumption. Nonetheless, the trends for mid-story oaks have been declining steadily basewide in response to multiple fires. Finally, the monitoring plot data have distinguished evergreen and semi-deciduous oaks from deciduous oaks in their ability to degrade the longleaf pine sand hill community. Herbicide and mechanical removal of hardwoods should concentrate on evergreen oak removal (e.g., laurel oak and live oak) rather than deciduous species like turkey oak or sand post oak.

The ECM is a GIS and remote sensing-based tool that estimates ecological condition through critical data layers that are important to longleaf pine communities. These data include fire frequency, time since last fire, the presence of RCW, the road density of an area, and the time since last groundcover disturbance. The ECM has recently been subjected to sensitivity analysis and found to be a stable method for estimating ecological condition at a landscape scale. Its accuracy was reported at 86 percent when it was developed. The ECM allows for a spatially explicit, long-term trend to be developed for Eglin AFB even prior to the collection of ecological monitoring plot data, since the data which comprise, the ECM are available from 1994. The model output is used to prioritize fire for the following year, as all areas that show a negative change in ecological condition are given priority for fire. The ECM is easy to understand and has become a critical link between NR and the Eglin AFB community showing trends in ecological health.

9.2.3 Significant Natural Areas

Within designated significant natural areas (SNAs) that occur in longleaf pine habitat types, the ECM is used to observe annual trends in the health of these high biodiversity areas. A table of each SNA will be produced each fall with the proportion of acres in each of the four ECM tier categories. When any areas of these SNAs

degrades to below "good," the management options for these areas will be evaluated in accordance with each SNA management unit plan.

9.2.4 Seepage Slopes

Estimates indicate that only one percent of the original extent of seepage slopes in Florida remain (FNAI and FDNR 1990). Eglin AFB is particularly important because it contains some of Florida's largest remaining tracts of seepage slopes. Seepage slopes are fire dependent and are embedded in the longleaf pine matrix on the eastern portions of Eglin AFB. These wetlands possess the highest biodiversity at Eglin AFB, including many rare and state protected species.

In 2003, monitoring methodology was developed and implemented for seepage slopes. Monitoring is being conducted to examine if hogs are targeting particular species, areas, or distributions of seepage slopes, assess the success of current and future control measures for feral hogs, and evaluate the current status of woody encroachment with respect to fire frequency. Following the completion of the 2003 monitoring, an increase in trapping/hunting pressure began in the fall of 2003. Personnel employed by the USDA began trapping and hunting hogs in and around the seepage slopes monitored in this study. USDA personnel performed track counts on the hogs as well as maintained data on number of hogs removed in each area. Results from this study were published by Engeman et al. (2007) and showed that hunting pressure had a significant impact on hog damage in these sensitive habitats. Simple valuation of the loss of wetland ecosystem services showed that hog trapping in closed areas was cost-effective in managing these ecosystems.

Seepage slopes continue to be monitored on a three-year cycle and data gathered are analyzed on that cycle to assess damage and inform managers of the effectiveness of current control measures. Additionally, this monitoring program will help guide fire management decisions regarding seepage slopes by providing information on ecological trends as they relate to prescribed burning.

9.2.5 Steepheads

Eglin AFB is especially important in the conservation of steepheads because it contains the highest abundance and density of steepheads under a single ownership. Steepheads on Eglin AFB are being threatened due to damage by invasive exotics such feral hogs, Chinese tallow tree, and Japanese climbing fern, as well as surface runoff and sedimentation from nearby clay pits and roads.

In 2004, monitoring methodology was developed and implemented for steepheads. Following completion of the 2004 monitoring of all steepheads, personnel employed by the USDA began trapping/hunting hogs in and around the steepheads monitored in this study. USDA personnel performed track counts on the hogs as well as maintained data on number of hogs removed from each area. Steepheads will continue to be monitored on a three- to four-year cycle in the future to assess the effects of the control measures on hog damage in the ravines. Detailed management of steepheads can be found in Tab 9—Ecological Monitoring Component Plan and feral hog management details can be found in Tab 11—Invasive Non-Native Wildlife, Feral Animals, and Nuisance Native Wildlife Control Plan.

9.2.6 Barrier Island

The monitoring for this community primarily focuses on rare and protected species monitoring, with the assumption that these species will act as "indicator species" for overall ecosystem health. Species monitored on a regular basis include rare and protected species such as sea turtles, piping plover, and Florida perforate lichen. Surveys for invasive exotic species are also conducted. General community monitoring is primarily done only in association with a specific event or disturbance that occurs on the island such as hurricanes or large-scale military missions.

9.2.7 Eglin U.S. Fish and Wildlife Service Aquatic Monitoring

The USFWS-FR is the primary entity for aquatic investigations of fishery resources on Eglin AFB. The goal of the USFWS-FR partnership with Eglin AFB is to provide technical assistance for monitoring and adaptive management of rivers and streams and protection of imperiled aquatic species. Biological, chemical, and physical survey data are collected to improve understanding of stream system function, resilience, and response to stressors as well as species' sensitivity to watershed level activities. Details on this program are available in the Ecological Monitoring section.

USFWS-FR personnel conduct stream fish, aquatic macro-invertebrate, and freshwater mussel surveys and monitoring throughout Eglin AFB to evaluate stream health, and use information gathered to suggest management actions that conserve or restore aquatic resources. These surveys also provide information on the status and distribution of certain species that have not been well-surveyed in other locations. In response to a 2010 petition to the USFWS by the Center for Biological Diversity to review the status of over 400 aquatic species in the southeastern U.S., Eglin AFB examined its aquatic monitoring data on potentially listed species and was able to increase the distribution records and population accounts for three species of caddisflies (*Hydroptila okaloosa, Hydroptila sarahae,* and *Polycentropus floridensis*). This information resulted in a nonsubstantial 90-day finding and "Do Not Warrant Endangered Species Act Protection" categorization for these three caddisfly species.

Water chemistry and stream velocity data are also collected as part of fish and invertebrate collections and assessments. Indicators such as dissolved oxygen, temperature, pH, conductivity, and turbidity are used to characterize baseline parameters and for trend analysis. Coupled with biological and physical parameters, water chemistry data supports adaptive management of Eglin AFB's NRs.

Because aquatic habitat restoration is an important component to resource management on Eglin AFB, before and after strategic sampling is conducted to selected restoration projects, including removal of fish passage barriers and erosion control projects. Biological, chemical, and physical data are collected at sites prior to and after restoration projects (at six months, one year, and five years) to monitor change.

9.2.8 Approaches to Monitoring and Analysis

A variety of analytical methods are necessary to accommodate the varying information needs of managers and other interested parties, and to be able to assess ecological trends at the appropriate temporal and spatial scales. Both spatial and non-spatial methods of analysis are being employed on Eglin AFB to answer questions from a wide-ranging audience with very different objectives and levels of ecological understanding. The first step in deciding what and how to analyze ecological monitoring data is to determine what questions managers need answered. The next step is choosing which analytical methods are most appropriate in answering given questions. Specific analytical methods for each community target are addressed in Tab 9—Ecological Monitoring Component Plan.

9.2.9 Research Partnerships and Internships

By partnering with educational institutions, NR personnel encourage research to answer specific management questions, allowing NR to obtain valuable personnel and equipment resources that would not otherwise be available. Research also serves a key role in the ORM adaptive management process by answering management questions in greater depth and with more specific expertise than can be answered through monitoring alone. Such partnerships also provide additional perspectives on how to enhance NR programs. Research partners help to identify the major threats to natural resources and promote sound

stewardship. Conversely, the scale and relative intactness of natural systems on Eglin AFB offers an attractive living laboratory for the larger scientific community.

Due to the high volume of ecological research conducted on the Eglin Reservation, concurrent with an increase in mission tempo, Eglin's NRS developed a research approval process based on guidance by the 96 TW (Figure 9-1). After a request has been made to conduct research on Eglin to the NRM, guest researchers must complete and return a signed copy of the Eglin Guest Researcher Memorandum of Agreement. Upon receipt, the NR research coordinator distributes the Agreement for initial review to all supervisors within NR and the Eglin RC3. If the Agreement is approved by NR and accepted for a briefing to the RC3, then the research coordinator schedules a full decisional brief to the RC3. Based on the RC3 briefing, a decision is made to either approve the research as is, approve the research with caveats, recommend additional briefing to the IMST, or to disapprove. Examples of caveats include submitting an AF 813 if the proposed research has the potential to impact wetlands, cultural sites, protected species, or any other range assets and/or AF 103 dig permit if the proposed research involves digging or soil disturbance (pitfall traps, sand fence, cores, etc.). If closed area access is requested in the Research Agreement, then the researchers are required to attend an Eglin UXO briefing. Once all approvals are gained and caveats addressed, the NR research coordinator issues an official authorization letter on USAF letterhead that the researchers must carry in their vehicle(s) at all times for range access. All range access for researchers is coordinated through NR to ensure researchers are following Joint Test and Training Operations Control Center access procedures.

In addition to research partnerships, high school, undergraduate, and graduate level internships are also a means of meeting public outreach goals while expanding capabilities. Beginning in 2001, high school, undergraduate, and graduate students have been interning at NR to receive credit toward their diplomas or degrees. Not only do the interns benefit from their experience while at NR, but NR programs benefit from quality volunteers.

9.3 Annual INRMP Review and Update Requirements

The INRMP requires annual review, in accordance with DoDI 4715.03, Natural Resources Conservation Program, and AFMAN 32-7003, to ensure the achievement of mission goals, verify the implementation of projects, and establish any necessary new management requirements. This process involves installation natural resources personnel and external agencies working in coordination to review the INRMP. If the installation mission or any of its natural resources management issues change significantly after the creation of the original INRMP, a major revision to the INRMP is required. The need to accomplish a major revision is normally determined during the annual review with USFWS, the appropriate State, and NOAA (if required). The NR Chief documents the findings of the annual review in an Annual INRMP Review Summary and obtains signatures from the coordinating agencies on review findings. By signing the Annual INRMP Review Summary, the collaborating agency representatives assert concurrence with the findings. If any agency declines to participate in an on-site annual review, the NR Chief submits the INRMP for review along with the Annual INRMP Review Summary document to the agency via official correspondence and request return correspondence with comments/concurrence. AFCEC guidance suggests a full revision process be completed every five years even if there are no significant changes in missions or natural resources management.

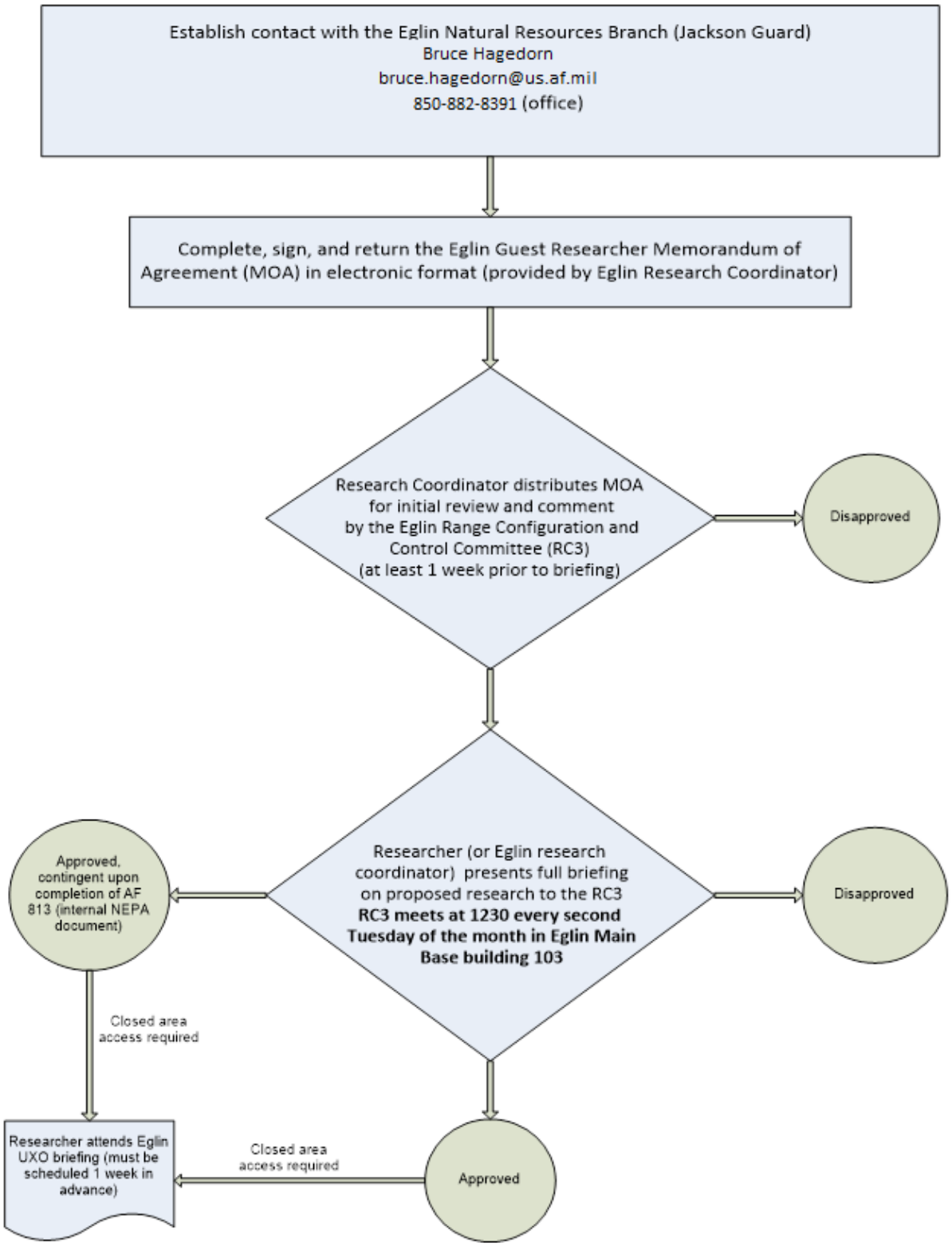

Figure 9-1. Eglin Air Force Base guest researcher approval process workflow.

Although Eglin AFB is responsible for the development of the INRMP, several state and federal agencies also play a critical role in the process. The INRMP reflects the mutual agreement of the USFWS, FWC, and NMFS in regard to the conservation, protection, and management of fish and wildlife resources and of federally protected species. The USFWS, FWC, NMFS, and the NR Chief/ AFCEC Installation Support Team (IST) conduct an Annual INRMP Review Meeting. This meeting takes place in person with respective representatives for each agency. Individuals may telephone or video call if they cannot attend in person. During this meeting the NR Chief/IST updates the external stakeholders/parties with the end of the year execution report and coordinates future work plans and any necessary changes to management methods etc. All parties review the INRMP and begin preliminary collaborative work on updating the INRMP (new policies, procedures, impacts, mitigations, etc.) as applicable.

Annual reviews facilitate “adaptive management” by providing an opportunity for the parties to review and evaluate their activities and make adjustments as necessary. NR management will review the INRMP annually to document implementation and assess the effectiveness of the program, process, and the goals and objectives. Any changes in the military mission, condition of natural resources, or regulatory requirements will be addressed during these annual updates. Eglin NRS will document the outcome of this review in a memorandum summarizing the rationale for the conclusions the parties have reached, updates on accomplishments, and future changes to the goals and objectives. Eglin NRS will also present the findings to senior base leaders, Major Command, the IST and partners on the status and effectiveness of the plan.

In the past, manual updates were reflected in the INRMP with “tracked changes” from the year. Under the new process, changes will be made to the INRMP template document (which is stored on eDash) during the annual review, and updates will be captured in the Summary of Changes table that goes at the beginning of the INRMP. Changes to individual CPs will continue to be made using “tracked changes,” to be reviewed and accepted periodically by appropriate NR personnel.

10.0 ANNUAL WORK PLANS

The INRMP Annual Work Plans are included in this section. These projects are listed by fiscal year, including the current year and four succeeding years. For each project and activity, a specific timeframe for implementation is provided (as applicable), as well as the appropriate funding source, and priority for implementation. The work plans provide all the necessary information for building a budget within the USAF framework. Priorities are defined as follows.

- High—The INRMP signatories assert that if the project is not funded the INRMP is not being implemented and the USAF is non-compliant with the Sikes Act; or that it is specifically tied to an INRMP goal and objective and is part of a "Benefit of the Species" determination necessary for ESA Section 4(a)(3)(B)(i) critical habitat exemption.

- Medium—Project supports a specific INRMP goal and objective and is deemed by INRMP signatories to be important for preventing non-compliance with a specific requirement within a natural resources law or by EO 13112, *Exotic and Invasive Species*. The INRMP signatories, however, would not contend that the INRMP is not being implemented if not accomplished within the programmed year due to other priorities.

- Low—Project supports a specific INRMP goal and objective, enhances conservation resources or the integrity of the installation mission, and/or supports long-term compliance with specific requirements within natural resources law; but is not directly tied to specific compliance within the proposed year of execution.

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
GOAL 1—PROVIDE DIRECT SUPPORT AND NATURAL RESOURCES COORDINATION SERVICES TO EGLIN AFB BY PLANNING FOR AND ADAPTING TO A RAPIDLY CHANGING MILITARY MISSION.						
Objective 1.1. Support military mission objectives through a proactive and responsive natural resources analysis and consultation process.						
Project 1.1.1 Annually coordinate with environmental impact analysis working group members, and the Range Configuration Control Committee to improve the Environmental Impact Analysis Process (EIAP), including design and distribution of environmental requirements through methods such as the AF Form 813, CSE, and guidebooks.	NRM1, FTFAA53227119 MGT, SPECIES, AQUATIC		NRM1, FTFAA53237119 MGT, SPECIES, AQUATIC	NRM1, FTFAA53247119 MGT, SPECIES, AQUATIC	NRM1, FFTAA53257119 MGT, SPECIES, AQUATIC	NRM1, FFTAA53267119 MGT, SPECIES, AQUATIC
Project 1.1.2. Maintain a compliance program to implement and monitor required relevant natural resources terms and conditions and conservation measures from the Endangered Species Act Section 7 consultations, MMPA consultations, NEPA analyses, and other applicable regulatory permits, and provide annual reports to the appropriate regulators.	NRM1, FTFAA53227119 MGT, SPECIES, AQUATIC		NRM1, FTFAA53237119 MGT, SPECIES, AQUATIC	NRM1, FTFAA53247119 MGT, SPECIES, AQUATIC	NRM1, FFTAA53257119 MGT, SPECIES, AQUATIC	NRM1, FFTAA53267119 MGT, SPECIES, AQUATIC
Project 1.1.3. Annually review 100 percent of submitted Air Force Form 813s, Environmental Assessments (EAs), and EISs for natural resources concerns, attend meetings/site visits, and provide comments to EIAP.	NRM1, FTFAA53227119 MGT, SPECIES, AQUATIC		NRM1, FTFAA53237119 MGT, SPECIES, AQUATIC	NRM1, FTFAA53247119 MGT, SPECIES, AQUATIC	NRM1, FTFAA53257119 MGT, SPECIES, AQUATIC	NRM1, FFTAA53267119 MGT, SPECIES, AQUATIC
Project 1.1.4. Annually develop CZMA determinations and conduct USFWS/NMFS/MMPA Section 7 consultations as required to support Eglin AFB missions and operations.	FTFAA53227119 MGT, SPECIES, AQUATIC		FTFAA53237119 MGT, SPECIES, AQUATIC	FTFAA53247119 MGT, SPECIES, AQUATIC	FTFAA53257119 MGT, SPECIES, AQUATIC	FTFAA53267119 MGT, SPECIES, AQUATIC
Objective 1.2. Support near-term military mission objectives by contributing natural resources management expertise to decision makers to inform a proactive planning process.						
Project 1.2.1. Annually obtain updated geospatial data on range user assets in compliance with the Eglin GeoBase Strategic Plan.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 1.2.2. Support Flight Safety and Airfield Management objectives by advising and coordinating on airfield management actions, assisting with obtaining permits, and responding to emergency wildlife (Bird/Wildlife Air Strike Hazard) situations, as needed.	NRM1		NRM1	NRM1	NRM1	NRM1

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 1.2.3. Protect valuable range/mission assets by conducting nuisance animal removal efforts in emergency response situations. Support the 96th Civil Engineer Group/Pest Management Shop (CEG/CEOIUE), as needed.	FTFAA53227122 MGT, NUISANCE WILDLIFE		FTFAA53237122 MGT, NUISANCE WILDLIFE	FTFAA53247122 MGT, NUISANCE WILDLIFE	FTFAA53257122 MGT, NUISANCE WILDLIFE	FTFAA53267122 MGT, NUISANCE WILDLIFE
Objective 1.3. Ensure long-term range availability, sustainability, and resilience for the military mission through effective natural resources management, coordination, and communication.						
Project 1.3.1. Annually ensure access to the Eglin Gulf Test and Training Range (EGTTR) for mission activities by utilizing the mission assessment decision matrix, communicating frequently with proponents and regulators, and completing Incidental Harassment Authorization and LOA applications and BAs.	FTFAA53227119 MGT, SPECIES, AQUATIC		FTFAA53237119 MGT, SPECIES, AQUATIC	FTFAA53247119 MGT, SPECIES, AQUATIC	FTFAA53257119 MGT, SPECIES, AQUATIC	FTFAA53267119 MGT, SPECIES, AQUATIC
Project 1.3.2. Maintain annual coordination with base contracting, real estate, and relevant CEG organizations to ensure that requirements from Section 7 consultations, EISs, EAs, and other applicable regulatory permits are included in price estimates for construction and road Projects and included in contracts.	NRM1, FTFAA53227119 MGT, SPECIES, AQUATIC		NRM1, FTFAA53237119 MGT, SPECIES, AQUATIC	NRM1, FTFAA53247119 MGT, SPECIES, AQUATIC	NRM1, FTFAA53257119 MGT, SPECIES, AQUATIC	NRM1, FFTAA53267119 MGT, SPECIES, AQUATIC
Project 1.3.3. Ensure the compatibility of recreation areas with the short- and long-term requirements of the military mission through at least annual coordination with and approval by the OAC. OAC planning cycle by 30 June annually.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 1.3.4. Annually provide guidance, direction and oversight for the implementation of REPI- funded RFS recovery efforts at Escribano Wildlife Management Area (WMA).	NRM1		NRM1	NRM1	NRM1	NRM1
Project 1.3.5. Assist with prescribed fires and other habitat improvement measures to grow the RFS population at Escribano Point WMA, and to aid achievement of the recovery criteria as listed in the recovery plan.	WLFC, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER		WLFC, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER	WLFC, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER	WLFC, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER	WLFC, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER
Project 1.3.6. Conduct a five-year update of the Eglin AFB INRMP, and obtain USFWS and Florida Fish and Wildlife Conservation Commission signatures by 15 August 2022.			NRM1			

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 1.3.7. Annually review all INRMP component plans, appendices, and tabs and update or reformat as needed. By 2024, update, revise, and reformat the T&E and Recreation CPs.			NRM1	NRM1	NRM1	NRM1
PROJECT 1.3.8. Annually hold a forum to ensure 96 CEG road development/repair, fire, forestry, and wildlife management actions do not contribute to a net gain of invasive non-native plants species on Eglin AFB.	NRM1		NRM1	NRM1	NRM1	NRM1
Objective 1.4. Provide for effective resource conservation and protection through enforcement of natural resources laws and public use outdoor recreation rules and regulations.						
Project 1.4.1. Partner with 96 Security Forces Squadron, Eglin Legal Office, 96 TW Range Group, and the Eglin Installation Support Section to develop and implement a sound and effective Conservation Law Enforcement Program (CLEP) by 2020, utilizing both Florida Fish and Wildlife Conservation Commission (FWC) Enhanced Patrol and USFWS CLEO personnel.	NRM1, AFCEOS109522		NRM1, AFCEOS109523	NRM1, AFCEOS109524	NRM1, AFCEOS109525	NRM1, AFCEOS109526
Project 1.4.2. Annually brief base leadership, coordinate with the OAC working group, and report results of CLEP to the TW/CC.	NRM1		NRM1	NRM1	NRM1	NRM1
GOAL 2—ENABLE LONG TERM SUSTAINABILITY OF EGLIN AFB ENVIRONMENTS FOR MILITARY TESTING/TRAINING BY PROTECTING, SUSTAINING, AND MONITORING RARE AND PROTECTED SPECIES ACROSS THE BASE.						
Objective 2.1. By 2022, accomplish TSI sand pine removal in areas that are not commercially viable within 0.5 mile of east side RCW designated foraging habitat.						
Project 2.1.1. By 2022, establish a 30-acre native seed orchard utilizing up to five selected species native to Eglin AFB.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 2.1.2. Annually plant a minimum of 80 acres of native groundcover either by direct-seeding or containerized plugs.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 2.1.3. Conduct long-term suppression of invasive species in priority areas of the CCA to reduce impacts to natural resources. Provide rapid response to protect high value habitat and/or resources, as needed.	FTFAA53226121 MGT, INVASIVE SPECIES,		FTFAA53236121 MGT, INVASIVE SPECIES,	FTFAA53246121 MGT, INVASIVE SPECIES,	FTFAA53256121 MGT, INVASIVE SPECIES,	FTFAA53266121 MGT, INVASIVE SPECIES,

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 2.1.4. Annually assess longleaf plantations needed for ecological restoration where the understory and planted longleaf display low vigor.	NRM1		NRM1	NRM1	NRM1	NRM1
Objective 2.2. Recover and monitor RCWs in accordance with federal law and in support of mission flexibility.						
Project 2.2.1. Annually drill artificial cavities in 350 active clusters in the western subpopulation that contain less than three suitable cavities and in all active clusters in the eastern subpopulation that contain less than four suitable cavities	NRM1, FTFAA53227119 MGT, SPECIES, RCW		NRM1, FTFAA53237119 MGT, SPECIES, RCW	NRM1, FTFAA53247119 MGT, SPECIES, RCW	NRM1, FTFAA53257119 MGT, SPECIES, RCW	NRM1, FTFAA53267119 MGT, SPECIES, RCW
Project 2.2.2. Annually conduct tree checks on all active RCW clusters and inactive recruitment clusters.	NRM1, FTFAA53227119 MGT, SPECIES, RCW		NRM1, FTFAA53237119 MGT, SPECIES, RCW	NRM1, FTFAA53247119 MGT, SPECIES, RCW	NRM1, FTFAA53257119 MGT, SPECIES, RCW	NRM1, FTFAA53267119 MGT, SPECIES, RCW
Project 2.2.3. Annually confirm minimum of 450 potential breeding groups by completing nest checks on 20 percent of west side groups and 33 percent of east side groups and conducting early morning group follows only in groups where no nests are located. Most recent status for each group will be used during the annual count.	NRM1, FTFAA53227119 MGT, SPECIES, RCW		NRM1, FTFAA53237119 MGT, SPECIES, RCW	NRM1, FTFAA53247119 MGT, SPECIES, RCW	NRM1, FTFAA53257119 MGT, SPECIES, RCW	NRM1, FTFAA53267119 MGT, SPECIES, RCW
Project 2.2.4. Annually evaluate the boundaries of the CCA, and use the CCA to prioritize restoration activities in longleaf pine habitats across Eglin AFB.	NRM1		NRM1	NRM1	NRM1	NRM1
Objective 2.3. Protect, monitor, and restore RFS and their habitats in accordance with federal law.						
Project 2.3.1. Conduct annual sampling of all historically occupied RFS breeding ponds (if ponds fill) for salamander larvae and 25 percent potential ponds to understand population trends and locate new populations.	NRM1, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER		NRM1, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 2.3.2. Maintain a minimum three-year average fire return interval in all historically occupied RFS breeding ponds and a subset of suitable non-historically occupied ponds within the East Bay Flatwoods and Oglesby/Alligator Creek areas. Monitor burn success using an in-pond walk-through within one month of each burn. Prioritize ponds for growing season basin burnout when desired prescribed fire effects do not occur in breeding ponds during burns targeting the surrounded flatwoods uplands.	NRM1, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC		NRM1, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC	NRM1, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC	NRM1, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC	NRM1, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC
Project 2.3.3. Work with Fire and Forest Management to identify areas for upland overstory basal area reduction surrounding RFS breeding ponds.	NRM1, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER		NRM1, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER
Project 2.3.4. Monitor public access and nuisance wildlife control structures in RFS habitat. Fix structures as needed and monitor success (vehicle/nuisance wildlife exclusion) annually.	NRM1, FTFAA53227122 MGT, NUISANCE WILDLIFE		NRM1, FTFAA53237122 MGT, NUISANCE WILDLIFE	NRM1, FTFAA53247122 MGT, NUISANCE WILDLIFE	NRM1, FTFAA53257122 MGT, NUISANCE WILDLIFE	NRM1, FTFAA53267122 MGT, NUISANCE WILDLIFE
Project 2.3.5. Directly control invasive non-native plant and animal (feral hog) species in RFS habitat. Invasive non-native plant and animal surveys will be conducted during annual dip net surveys. Breeding ponds not surveyed annually will be surveyed for invasive non-native species on a five-year interval. Known locations of invasive non-native plant species will be treated, focusing on restoring native plant communities in unoccupied ponds. Annually ensure personnel availability to rapidly respond to invasive plant and animal incursion.	FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER. FTFAA53226121, INVASIVE SPECIES, FTFAA53227122 NUISANCE SPECIES		FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER. FTFAA53236121, INVASIVE SPECIES, FTFAA53237122 NUISANCE SPECIES	FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER. FTFAA53246121, INVASIVE SPECIES, FTFAA53247122	FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER. FTFAA53256121, INVASIVE SPECIES, FTFAA53257122	FTFAA5366119 MGT, HABITAT, FLATWOODS SALAMANDER.F TFAA53266121, INVASIVE SPECIES, FTFAA53267122 NUISANCE SPECIES

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 2.3.6. For decision and mission support, monthly monitor water levels at all historically occupied ponds; annually maintain and monitor at least one drift fence to confirm and track timing of RFS adult/metamorph movement on landscape. During dry years when breeding wetlands are inundated by January or February, utilize egg-searching to track viability of eggs, which can inform timing of prescribed fire and necessity of additional monitoring.	NRM1, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER		NRM1, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER
Project 2.3.7. To better understand population dynamics for species recovery and ultimately mission support, collect genetic samples from regenerative tissues of adults and metamorphs at drift fences and from larvae at all ponds.	NRM1, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER		NRM1, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER
Project 2.3.8. Utilize artificial ponds (e.g., cattle tanks) as a way to increase larval survival or for short-term rescue during periods of extreme weather (e.g., drought, heavy rain) while investigating this practice as a means to potentially repatriate RFSs to historic sites that no longer contain an extant population.	NRM1, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER		NRM1, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER
Project 2.3.9. Annually evaluate suitable site(s) among both historically occupied-but-extirpated and not historically occupied wetlands, and release either larvae or subadult/metamorph individuals into habitats in an attempt to enhance the RFS resiliency, redundancy, and representation via repatriation on Eglin AFB; obtain genetic regenerative tissue samples (and, when possible, mark) and release late-stage larvae or metamorphs by placing them in suitable habitat (for metamorphs, near edge of wetland on a damp night); install and monitor two drift fences at translocation ponds if and after yearly translocations are made.	NRM1, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER		NRM1, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER	NRM1, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Objective 2.4. Protect Eastern indigo snakes and their habitats in accordance with (IAW) federal law, and prepare for the potential federal listing of the gopher tortoise and anticipated listing of alligator snapping turtle.						
Project 2.4.1. Ensure that 100 percent of proposed Project areas identified by the EIAP where ground will be significantly disturbed are surveyed for gopher tortoises, eastern indigo snakes, and other sensitive commensals (in-house or by contract). Tortoises that cannot be avoided will be relocated.	FFTFAA53227119, MGT, SPECIES, INDIGO SNAKE		FFTFAA53237119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53247119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53257119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53267119, MGT, SPECIES, INDIGO SNAKE
Project 2.4.2. Conduct annual monitoring of GT populations to ensure long-term viability, IAW FWS permitting and CCA guidelines. Document signs of at-risk burrow commensals, including the eastern indigo snake.	FFTFAA53227119, MGT, SPECIES, INDIGO SNAKE		FFTFAA53237119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53247119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53257119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53267119, MGT, SPECIES, INDIGO SNAKE
Project 2.4.3. Implement drift fence/camera trap surveys to document presence of eastern indigo snakes. Select sites with historical eastern indigo snake occurrence.	FFTFAA53227119 , MGT, SPECIES, INDIGO SNAKE		FFTFAA53237119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53247119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53257119 MGT, SPECIES, INDIGO SNAKE	FFTFAA53267119 MGT, SPECIES, INDIGO SNAKE
Project 2.4.4. IAW GT PCO and FWC MOA, establish and maintain at least three Minimum Viable Populations (MVP) of gopher tortoises (outside airfield, cantonment, and test area environments) per year, with an ultimate goal of 18 MVPs in the CCA. Utilize a variety of sources for establishing viable populations, including source populations located off the installation.	FFTFAA53227119 MGT, SPECIES, INDIGO SNAKE		FFTFAA53237119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53247119, MGT, SPECIES, INDIGO SNAKE	FFTFAA53257119 MGT, SPECIES, INDIGO SNAKE	FFTFAA53267119 MGT, SPECIES, INDIGO SNAKE
Project 2.4.5. Ensure coordination annually, and as needed, between all natural resource sections to plan timing and location of prescribed burns and/or silvicultural activities for gopher tortoise pre-release habitat improvement, vegetative fuels reduction ahead of new soft release pen installation, and for post-release habitat management.	NRM1		NRM1	NRM1	NRM1	NRM1

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 2.4.6. By April of 2022 meet with USFWS and FWC to discuss feasibility of eastern indigo snake repatriation to Eglin AFB as a contribution toward delisting of the species.	NRM1					
Project 2.4.7. Develop a monitoring program for alligator snapping turtle to generate distribution, population, and trend data and management data for Biological Assessments.	NRM1, FTFAA5327119, MGT, SPECIES, OKALOOSA DARTER		NRM1, FTFAA5337119, MGT, SPECIES, OKALOOSA DARTER	NRM1, FTFAA5347119, MGT, SPECIES, OKALOOSA DARTER	NRM1, FTFAA5357119, MGT, SPECIES, OKALOOSA DARTER	NRM1, FTFAA5367119, MGT, SPECIES, OKALOOSA DARTER
Objective 2.5. Enable long term sustainability of barrier island environments for military testing/training by protecting, maintaining, and monitoring T&E species and their habitats.						
Project 2.5.1. Annually locate, protect, and evaluate 100 percent of sea turtle nests on Air Force property at CSB and SRI. Collect and maintain data on nest success, depredation, and disorientation for all nests.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53227119 MGT, SPECIES, SEA TURTLE		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53237119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53247119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53257119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53267119 MGT, SPECIES, SEA TURTLE
Project 2.5.2. Respond to, and investigate, 100 percent of sea turtle and marine mammal stranding reports on Air Force property. Collect appropriate data and report to the stranding and salvage network; contact within 24 hours of investigating the report.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53227119 MGT, SPECIES, SEA TURTLE		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53237119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53247119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53257119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53267119 MGT, SPECIES, SEA TURTLE
Project 2.5.3. Conduct shorebird transect surveys monthly (July–May) at SRI and CSB to identify important habitat areas for protection and to determine population trends.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 2.5.4. Conduct shorebird nesting surveys at SRI for least terns, snowy plovers, and black skimmers from March through July to locate and protect nests from the public and/or other activities that may disturb or destroy nests.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53227119 MGT, SPECIES, SEA TURTLE		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53237119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53247119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53257119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53267119 MGT, SPECIES, SEA TURTLE
Project 2.5.5. Monitor the Florida perforate lichen populations according to the schedule and protocol set forth in the T&E Plan.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP
Project 2.5.6. Develop a hurricane response plan for lichen populations at risk of storm surge overwash to plan for and anticipate increasing frequency and severity of tropical cyclones.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP
Project 2.5.7. Quarterly conduct tracking tube surveys for the Santa Rosa beach mouse using 10 transects for population density and trends.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53227119 MGT, SPECIES, SEA TURTLE		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53237119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53247119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53257119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53267119 MGT, SPECIES, SEA TURTLE

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 2.5.8. Establish one tracking tube transect at CSB and run every other month, every year, to detect St. Andrews beach mouse.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53227119 MGT, SPECIES, SEA TURTLE		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53237119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53247119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53257119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53267119 MGT, SPECIES, SEA TURTLE
Project 2.5.9. Annually monitor predator activity on SRI and CSB, and follow up with predator control efforts if required. Provide predator control support to SRI and CSB during sea turtle nesting season when needed	NRM1, FTFAA53226121 MGT, INVASIVE SPECIES		NRM1, FTFAA53236121 MGT, INVASIVE SPECIES	NRM1, FTFAA53246121 MGT, INVASIVE SPECIES	NRM1, FTFAA53256121 MGT, INVASIVE SPECIES	NRM1, FTFAA53266121 MGT, INVASIVE SPECIES
Project 2.5.10. Annually maintain signs and exclusionary fencing for protected species and habitats at SRI and CSB.	NRM1, FTFAA53227119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53227119 MGT, SPECIES, SEA TURTLE		NRM1, FTFAA53237119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53237119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53247119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53247119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53257119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53257119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53267119 MGT, SPECIES, COASTAL DUNE GROUP, FTFAA53267119 MGT, SPECIES, SEA TURTLE
Project 2.5.11. Prioritize law enforcement and compliance checks on weekends and holidays for SRI during each shorebird nesting season			NRM1, AFCEOS109523	NRM1, AFCEOS109524	NRM1, AFCEOS109525	NRM1, AFCEOS109526
Objective 2.6. Restore Okaloosa darter habitat and monitor populations in support of darter delisting.						
Project 2.6.1. Annually monitor the Okaloosa darter populations and stream habitat according to the recovery plan and the post de-listing monitoring plan.	FTFAA5327119, MGT, SPECIES, OKALOOSA DARTER		FTFAA5337119, MGT, SPECIES, OKALOOSA DARTER	FTFAA5347119, MGT, SPECIES, OKALOOSA DARTER	FTFAA5357119, MGT, SPECIES, OKALOOSA DARTER	FTFAA5367119, MGT, SPECIES, OKALOOSA DARTER

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 2.6.2. Rehabilitate the last five known soil erosion sites that have the potential to impact Okaloosa darter habitat by 2027.	NRM1, FTFAA5322915 MGT, WETLANDS/FLOODPLAIN		NRM1, FTFAA5323915 MGT, WETLANDS/FLOODPLAIN	NRM1, FTFAA5324915 MGT, WETLANDS/FLOODPLAIN	NRM1, FTFAA5325915 MGT, WETLANDS/FLOODPLAIN	NRM1, FTFAA5326915 MGT, WETLANDS/FLOODPLAIN
Project 2.6.3. Restore the last two known fish passage barriers (C-74 pond and College Pond) in Okaloosa darter drainages as funding allows.	NRM1, FTFAA5322915 MGT, WETLANDS/FLOODPLAIN, WLFC		NRM1, FTFAA5323915 MGT, WETLANDS/FLOODPLAIN	NRM1, FTFAA5324915 MGT, WETLANDS/FLOODPLAIN	NRM1, FTFAA5325915 MGT, WETLANDS/FLOODPLAIN	NRM1, FTFAA5326915 MGT, WETLANDS/FLOODPLAIN
Project 2.6.4. By 2025, evaluate techniques and develop long-term strategy to reduce woody vegetation encroachment in near-stream riparian zones of known Okaloosa darter habitat with prescribed fire and/or chemical and mechanical methods.	NRM1, FTFAA5322915 MGT, WETLANDS/FLOODPLAIN, WLFC		NRM1, FTFAA5323915 MGT, WETLANDS/FLOODPLAIN	NRM1, FTFAA5324915 MGT, WETLANDS/FLOODPLAIN, WLFC	NRM1, FTFAA5325915 MGT, WETLANDS/FLOODPLAIN, WLFC	NRM1, FTFAA5326915 MGT, WETLANDS/FLOODPLAIN, WLFC
Objective 2.7. Minimize or eliminate threats to Gulf Sturgeon and freshwater mussel habitats and monitor populations potentially affected by Eglin Air Force Base missions.						
Project 2.7.1. Identify and rehabilitate the last 15 known soil erosion sites that have the potential to impact Gulf sturgeon and mussel habitat by 2023.	NRM1, FTFAA5322915 MGT, WETLANDS/FLOODPLAIN, WLFC		FTFAA5323915 MGT, WETLANDS/FLOODPLAIN, WLFC	FTFAA5324915 MGT, WETLANDS/FLOODPLAIN. WLFC	FTFAA5325915 MGT, WETLANDS/FLOODPLAIN. WLFC	FTFAA5326915 MGT, WETLANDS/FLOODPLAIN, WLFC
Project 2.7.2. Annually monitor Gulf sturgeon numbers and movements in marine, estuarine, and riverine areas in and around Eglin AFB, either through deployment of the base's receivers or by leveraging partnerships with agencies/universities to obtain data from similar studies being conducted around Eglin AFB.	FTFAA53227119 MGT, SPECIES, GULF STURGEON		FTFAA53237119 MGT, SPECIES, GULF STURGEON	FTFAA53247119 MGT, SPECIES, GULF STURGEON	FTFAA53257119 MGT, SPECIES, GULF STURGEON	FTFAA53267119 MGT, SPECIES, GULF STURGEON

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 2.7.3. Annually analyze data and assess potential impacts to Gulf sturgeon from Air Force missions and/or construction using data collected from studies being conducted in Gulf sturgeon critical habitat areas around Eglin AFB, to include population trends, movement and behavioral patterns, and identification of specific areas of interest for further investigation.	FTFAA53227119 MGT, SPECIES, GULF STURGEON		FTFAA53237119 MGT, SPECIES, GULF STURGEON	FTFAA53247119 MGT, SPECIES, GULF STURGEON	FTFAA53257119 MGT, SPECIES, GULF STURGEON	FTFAA53267119 MGT, SPECIES, GULF STURGEON
Project 2.7.4. By 2023, develop and implement a mussel monitoring plan for protected mussels found in portions of the Yellow and Shoal Rivers adjacent to Eglin AFB.	FTFAA53226120 MGT, SPECIES, FRESHWATER MUSSEL		FTFAA53236120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53246120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53256120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53266120 MGT, SPECIES, FRESHWATER MUSSEL
Project 2.7.5. Utilize mussel monitoring data to develop models which assess population trends and identify important riverine habitat by 2023.	FTFAA53226120 MGT, SPECIES, FRESHWATER MUSSEL		FTFAA53236120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53246120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53256120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53266120 MGT, SPECIES, FRESHWATER MUSSEL
Objective 2.8. Restore and monitor wetland and aquatic habitats for rare wetland species breeding.						
Project 2.8.1. Survey no less than 70 sites for Florida bog frogs, with three visits to each site.	FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER,		FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER,	FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER,	FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER,	FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER,
Project 2.8.2. Annually prioritize at least five riparian and/or ephemeral wetland areas for treatment using a combination of prescribed fire, chemical and mechanical removal to reduce midstory encroachment as a means to improve habitat for gopher frog, Florida bog frog, and/or eastern indigo snake.	NRM1, FTFAA53226119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC		NRM1, FTFAA53236119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC	NRM1, FTFAA53246119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC	NRM1, FTFAA53256119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC	NRM1, FTFAA53266119 MGT, HABITAT, FLATWOODS SALAMANDER, WLFC

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
GOAL 3—SUSTAIN HABITAT INTEGRITY, FUNCTIONALITY, AND PRODUCTIVITY BY MANAGING INVASIVE PLANTS AND ANIMALS, CONTINUING A ROBUST AND NATION-LEADING FIRE PROGRAM, AND MAINTAINING A HIGHLY PRODUCTIVE AND EFFECTIVE FORESTRY PROGRAM.						
Objective 3.1. Implement the Invasive Non-Native Wildlife, Feral Animals, and Nuisance Native Wildlife Component Plan to control invasive plants and animals.						
Project 3.1.1. Maintain invasive plant control efforts in concert with fire management and by using herbicide and non-chemical treatments. Efforts should focus on Category I and II species.	NRM1, WLFC, FTFAA53226121 MGT, INVASIVE SPECIES		NRM1, WLFC, FTFAA53236121 MGT, INVASIVE SPECIES	NRM1, WLFC, FTFAA53246121 MGT, INVASIVE SPECIES	NRM1, WLFC, FTFAA53256121 MGT, INVASIVE SPECIES	NRM1, WLFC, FTFAA53266121 MGT, INVASIVE SPECIES
Project 3.1.2. Evaluate the need for a comprehensive base-wide survey to document invasive plant infestations and search for species that could potentially arrive and establish in the next 5-10 years. Determine an appropriate interval for a regularly re-occurring base-wide survey, and ensure that effective early detection, rapid response (EDRR) protocols are in place for newly arrived infestations	NRM1, FTFAA53226121 MGT, INVASIVE SPECIES		NRM1, FTFAA53236121 MGT, INVASIVE SPECIES	NRM1, FTFAA53246121 MGT, INVASIVE SPECIES	NRM1, FTFAA53256121 MGT, INVASIVE SPECIES	NRM1, FTFAA53266121 MGT, INVASIVE SPECIES
Project 3.1.3. As part of the EDRR protocols developed in Project (3.1.2) minimize impacts from invasive non-native plant and animal species in RFS habitat by implementing an early detection/rapid response protocol. Annually ensure personnel availability to rapidly respond to invasive plant and animal incursions.	NRM1, FTFAA53226121 MGT, INVASIVE SPECIES		NRM1, FTFAA53236121 MGT, INVASIVE SPECIES	NRM1, FTFAA53246121 MGT, INVASIVE SPECIES	NRM1, FTFAA53256121 MGT, INVASIVE SPECIES	NRM1, FTFAA53266121 MGT, INVASIVE SPECIES
Project 3.1.4. Conduct long-term suppression of invasive species in priority areas to protect valuable range/mission assets and reduce impacts to sensitive species habitat	FTFAA53226121 MGT, INVASIVE SPECIES,		FTFAA53236121 MGT, INVASIVE SPECIES,	FTFAA53246121 MGT, INVASIVE SPECIES,	FTFAA53256121 MGT, INVASIVE SPECIES,	FTFAA53266121 MGT, INVASIVE SPECIES,
Project 3.1.5. Annually survey and treat a minimum of 33 percent of high quality natural areas within one mile of the urban interface for INS.	NRM1, FTFAA53226121 MGT, INVASIVE SPECIES		NRM1, FTFAA53236121 MGT, INVASIVE SPECIES	NRM1, FTFAA53246121 MGT, INVASIVE SPECIES	NRM1, FTFAA53256121 MGT, INVASIVE SPECIES	NRM1, FTFAA53266121 MGT, INVASIVE SPECIES

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Objective 3.2. Enhance military mission capability and long-term range sustainment on Eglin AFB through an adaptive wildland fire program that minimizes risk from wildfires, enhances ecosystem resilience through science-based application of prescribed fire, and provides key fire related information to decision makers while continuing to lead the nation in wildland fire management and training.						
Project 3.2.1. Safely and professionally suppress all wildfires on Eglin AFB with no lost-time firefighter injuries and no loss of Eglin AFB real property	WLFC		WLFC	WLFC	WLFC	WLFC
Project 3.2.2. Treat at least 90,000 acres with a combination of prescribed fire and wildfires managed for resource benefit annually, based on a five-year running average, using the burn prioritization model to identify key areas for fire. To count towards annual acres, wildfires must be managed intentionally for resource benefit and must meet objectives established in the prescribed fire plan.	WLFC		WLFC	WLFC	WLFC	WLFC
Project 3.2.3. Annually coordinate wildfire response procedures with EFES and local fire departments as needed, through joint training exercises, written standard operating procedures, and through groups such as the Urban Task Force and Base Emergency Responders Planning Committee.	WLFC		WLFC	WLFC	WLFC	WLFC
Project 3.2.4. Ensure no net loss of wildland fire management capacity at Eglin AFB while standing up AFCEC Wildland Fire Branch.	WLFC		WLFC	WLFC	WLFC	WLFC
Project 3.2.5. Continue to build Unmanned Aerial Vehicle/Unmanned Aerial System capacity within the Eglin WSM to support monitoring and aerial ignition capabilities through building partnerships and training personnel	NRM1, WLFC		NRM1, WLFC	NRM1, WLFC	NRM1, WLFC	NRM1, WLFC
Project 3.2.6. Annually update suppression considerations map of range, environmental, and cultural assets vulnerable to fire, coordinated with natural and cultural resource managers, Range Chiefs, interstitial training groups, and other pertinent range users.	WLFC		WLFC	WLFC	WLFC	WLFC

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 3.2.7. Through a responsive planning process, ensure minimal interference with military mission activity by conducting 100 percent of prescribed burns on Eglin AFB without causing mission delays.	WLFC		WLFC	WLFC	WLFC	WLFC
Project 3.2.8. Minimize mission delays and lost range space utilization due to wildfires by burning the most heavily used mission test/training areas on Eglin AFB ahead of scheduled hot missions and/or standing by on-site for missions, as requested, to facilitate rapid wildfire response.	WLFC		WLFC	WLFC	WLFC	WLFC
Project 3.2.9. By 2022, develop internal capacity for non-fire, installation NR managers and cooperators (i.e., Virginia Tech) to conduct small, wetland prescribed burns (RFS basins, Florida bog frog stream segments, etc.) as National Wildland Fire Coordinating Group RXB3 with minimal support and oversight from RXB2-qualified burn bosses on the Eglin WSM.	NRM1		NRM1			
Objective 3.3. Maintain a minimum three-year average fire return interval in all historically occupied RFS breeding ponds and a subset of suitable non-historically occupied ponds within the East Bay Flatwoods and Oglesby/Alligator Creek areas. Monitor burn success using an in-pond walk-through within one month of each burn. Prioritize ponds for growing season basin burnout when desired prescribed fire effects do not occur in breeding ponds during burns targeting the surrounded Restore and sustain the longleaf pine ecosystem and generate revenue for the NR program through sound forestry management.						
Project 3.3.1. Annually conduct forest inventory of a minimum of 10 percent of the interstitial area as needed for mission related decision support	NRM1		NRM1	NRM1	NRM1	NRM1
Project 3.3.2. Annually prioritize and manage longleaf pine habitat within the CCA to maintain and restore the longleaf pine ecosystem and associated species to increase ecosystem resiliency and military mission flexibility	NRM1, FTFA53227118 MGT, HABITAT, RCW, WLFC		NRM1, FTFA53237118 MGT, HABITAT, RCW, WLFC	NRM1, FTFA53247118 MGT, HABITAT, RCW, WLFC	NRM1, FTFA53257118 MGT, HABITAT, RCW, WLFC	NRM1, FTFA53267118 MGT, HABITAT, RCW, WLFC
Project 3.3.3. Accomplish all commercial sand pine harvest in 90 percent of east side RCW clusters by 2024 and all remaining clusters by 2025.	FTFAA53227118 MGT, HABITAT, RCW		FTFAA53237118 MGT, HABITAT, RCW	FTFAA53247118 MGT, HABITAT, RCW	FTFAA53257118 MGT, HABITAT, RCW	FTFAA53267118 MGT, HABITAT, RCW

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 3.3.4. By 2024, accomplish TSI sand pine removal in areas that are not commercially viable within 0.5 mile of east side RCW designated foraging habitat	FTFAA53227118 MGT, HABITAT, RCW		FTFAA53237118 MGT, HABITAT, RCW	FTFAA53247118 MGT, HABITAT, RCW		
Project 3.3.5. Annually assess longleaf plantations needed for ecological restoration where the understory and planted longleaf display low vigor.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 3.3.6. Annually update the five-year business plan utilizing new forest inventory for producing approximately 1 million dollars annually from the timber management program.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 3.3.7. Annually establish a minimum of 60,000 pine seedlings outside of the CCA to ensure a consistent revenue stream for future restoration activities.	NRM1		NRM1	NRM1	NRM1	NRM1
Objective 3.4. Protect and maintain existing areas that are important to biodiversity conservation, and monitor rare species when efforts will not conflict with mission priorities.						
Project 3.4.1. As needed, coordinate and review specific management and restoration activities in areas identified as ONAs, SBSs, and High Quality Natural Communities	NRM1		NRM1	NRM1	NRM1	NRM1
Objective 3.5. Maintain an integrated adaptive management by using field-based and remotely-sensed monitoring methods to detect changes in natural resources and numbers of protected species due to changing climate such as an increasing temperature, sea level rise.						
Project 3.5.1. By 2024, document trends in the longleaf pine habitat within the CCA on Eglin AFB using the ECM, and prioritize management based on these trends.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 3.5.2. Biennially use the ECM to determine rates of restoration for the longleaf pine sandhills communities on the eastern side of the Eglin Reservation, and incorporate results to prioritize management activities. Input into the Eglin Enterprise Spatial Database by December 2024.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 3.5.3. Annually identify areas for conserving longleaf regeneration. Prioritize activities in areas to promote advanced regeneration	NRM1		NRM1	NRM1	NRM1	NRM1

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 3.5.4. Annually designate "regeneration emphasis areas" and input into forestry concerns map for prescribed fire scheduling.	NRM1		NRM1	NRM1	NRM1	NRM1
GOAL 4—RESTORE, PROTECT, AND MONITOR AQUATIC HABITATS, AND WATERSHEDS TO COMPLY WITH FEDERAL LAW AND MAXIMIZE MISSION ACCESS AND FLEXIBILITY.						
Objective 4.1. Restore and monitor wetland and aquatic habitats for wetland breeding habitat, biodiversity conservation, ecosystem health, and compliance with the Clean Water Act.						
Project 4.1.1. By 2023, identify, prioritize, and rehabilitate up to 20 soil erosion sites in wetland riparian areas subject to a Clean Water Act notice of violation.	FTFAA5322916 MONITOR, WETLANDS		FTFAA5323916 MONITOR, WETLANDS			
Project 4.1.2. Annually maintain rehabilitated erosion sites upon completion (including those for Okaloosa darter and Gulf sturgeon Projects) for a minimum of three to five years and then as-needed thereafter to prevent loss of structural integrity.	FTFAA5322916 MONITOR, WETLANDS, FTFAA5322915 MGT, WETLANDS/FLOODPLAIN		FTFAA5323916 MONITOR, WETLANDS, FTFAA5323915 MGT, WETLANDS/FLOODPLAIN	FTFAA5324916 MONITOR, WETLANDS, FTFAA5324915 MGT, WETLANDS/FLOODPLAIN	FTFAA5325916 MONITOR, WETLANDS, FTFAA5325915 MGT, WETLANDS/FLOODPLAIN	FTFAA5326916 MONITOR, WETLANDS, FTFAA5326915 MGT, WETLANDS/FLOODPLAIN
Project 4.1.3. Annually monitor water quality at 15 sites using biological, chemical, and physical habitat assessments in Eglin AFB tributaries to the Yellow and Shoal Rivers.	FTFAA53226120 MGT, SPECIES, FRESHWATER MUSSEL		FTFAA53236120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53246120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53256120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53266120 MGT, SPECIES, FRESHWATER MUSSEL
Project 4.1.4. Annually inspect Eglin AFB boat landing sites for structural deterioration, erosion, and bank stability.	FTFAA53226120 MGT, SPECIES, FRESHWATER MUSSEL		FTFAA53236120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53246120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53256120 MGT, SPECIES, FRESHWATER MUSSEL	FTFAA53266120 MGT, SPECIES, FRESHWATER MUSSEL
Project 4.1.5. Complete two Yellow River bank stabilization projects in coordination with AHRES and NRDA by 2025.	FTFAA5322916 MONITOR, WETLANDS, FTFAA5322915 MGT, WETLANDS/FLOODPLAIN		FTFAA5323916 MONITOR, WETLANDS, FTFAA5323915 MGT, WETLANDS/FLOODPLAIN	FTFAA5324916 MONITOR, WETLANDS, FTFAA5324915 MGT, WETLANDS/FLOODPLAIN	FTFAA5325916 MONITOR, WETLANDS, FTFAA5325915 MGT, WETLANDS/FLOODPLAIN	

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 4.1.6. Consider/ Develop access restrictions to prevent damage to sensitive wetland areas from erosion in the East Bay Flatwoods area caused by off-road driving by the public.	NRM1		NRM1	NRM1	NRM1	NRM1
GOAL 5—PROVIDE A VARIETY OF USES, VALUES, PRODUCTS, AND SERVICES TO PRESENT AND FUTURE GENERATIONS WHILE MAINTAINING SUSTAINABLE ECOSYSTEMS.						
Objective 5.1. Provide hunting and fishing opportunities for the public consistent with demand, quality, and cost within the constraints of the Air Force mission.						
Project 5.1.1. Annually employ game check stations to collect biological, harvest, and hunting pressure data from specific Management Units (MUs) (Brier Creek and Jackson). Utilize data collected to make informed management decisions and ensure sustainable yield.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.1.2. Use herbicide and prescribed fire to control undesirable woody vegetation in the quail management emphasis area as needed	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.1.3. Annually host four high quality special opportunity public hunting events, specifically targeting youth and mobility-impaired participants	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.1.4. Manage three water bodies (Anderson, Indigo, and Duck ponds) for high intensity recreational fishing through the use of a supplemental feeding and stocking program. Annually host two-day youth fishing event at Anderson Pond.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.1.5. Develop policy and annual installation-specific hunting and fishing rule and regulation product to maximize recreational opportunities in a manner compatible with the military mission.	NRM1		NRM1	NRM1	NRM1	NRM1

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 5.1.6. Annually maintain approximately 100 acres of established public dove fields and consider establishing additional dove fields across the reservation as logistics and resources allow. Annually coordinate with Forestry Section to identify potential short-term dove hunting opportunities consistent with reforestation efforts (i.e. site prep areas).	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.1.7. By 2024 develop and implement a plan to improve the Hwy 87 primitive boat ramp to protect against structural deterioration and erosion, and to improve bank stability, ramp capacity, and function.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.1.8. By 2023 replace the water control structure that maintains Jr. Walton Pond as an impoundment and fix associated damage to RR211 to restore vehicular access	NRM1		NRM1	NRM1		
Project 5.1.9. By 2024, develop and implement public trapping opportunities to supplement ongoing feral hog control efforts/program.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.1.10. Monitor trends in game species populations as necessary using a combination of harvest data, track counts, spotlight surveys, and call count transects, following established protocols.	NRM1		NRM1	NRM1	NRM1	NRM1
Objective 5.2. Provide the public with non-consumptive recreation opportunities consistent with demand, quality, and cost within the constraints of the Air Force mission.						
Project 5.2.1. Annually manage 14 primitive campground sites and 17-day use areas at current levels of service to include mowing and replacing picnic tables and fire rings as needed, and evaluating garbage clean-up schedules. Review permit sales data to determine levels of utilization and appropriate alterations to maintenance schedules.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.2.2. Annually inspect existing designated Mountain Bike Areas (MBAs) to stem unauthorized creation of new trails. Update MBA trail maps as necessary and provide at NRS, online at eglin.iSportsman.net, and through the Avenza Maps application	NRM1		NRM1	NRM1	NRM1	NRM1

Table 10-1. Work plan implementation table.

	Plan: 2022	Acc:2022	Plan: 2023	Plan: 2024	Plan: 2025	Plan: 2026
Project 5.2.3. Annually maintain 18-hole disc golf course located within the Anderson Pond Recreation Area.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.2.4. Coordinate annually with Florida National Scenic Trail (FNST) and Florida Trail Association (FTA) contacts regarding access to and maintenance of the portions of the FNST within Eglin AFB.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.2.5. Work with USFS to advance planning and generate support to connect Eglin AFB and non-Eglin sections of the FNST via construction of a bridge spanning the Yellow River by 2025.	NRM1		NRM1	NRM1	NRM1	NRM1
Objective 5.3. Provide information and opportunities to the public pertaining to Eglin AFB's natural resource management in support of the military mission.						
Project 5.3.1. Annually coordinate with Eglin Official Bulletin staff or similar public relations outlets to advertise outdoor recreation opportunities across the reservation. Additionally, as needed, develop and disseminate through the NRS and online informational brochures highlighting unique recreational, hunting, and fishing opportunities on Eglin AFB.	NRM1		NRM1	NRM1	NRM1	NRM1
Project 5.3.2. Use an average of 7,000 volunteer hours annually to enhance conservation effectiveness.	NRM1, FTFAA53227119 MGT, SPECIES, SEA TURTLE		NRM1, FTFAA53237119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53247119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53257119 MGT, SPECIES, SEA TURTLE	NRM1, FTFAA53267119 MGT, SPECIES, SEA TURTLE

Table 10-2. Air Force Base Natural Resources project numbers and titles.

Fiscal Year	Project Number	Project Title
2023	FTFA231123	MGT, HABITAT, FORESTRY
2024	FTFA241123	
2025	FTFA251123	
2026	FTFA261123	
2027	FTFA271123	
2023	FTFA23022	MGT, HABITAT, RFS
2024	FTFA24022	
2025	FTFA25022	
2026	FTFA26022	
2027	FTFA27022	
2023	FTFA235012	MGT, HABITAT, RCW
2024	FTFA245012	
2025	FTFA255012	
2026	FTFA265012	
2027	FTFA275012	
2023	FTFA235199	MGT, INVASIVE SPECIES
2024	FTFA245199	
2025	FTFA255199	
2026	FTFA265199	
2027	FTFA275199	
2023	FTFA23002	MGT, NUISANCE WILDLIFE
2024	FTFA24002	
2025	FTFA25002	
2026	FTFA26002	
2027	FTFA27002	
2023	FTFA234242	MGT, SPECIES, MUSSELS
2024	FTFA244242	
2025	FTFA254242	
2026	FTFA264242	
2027	FTFA274242	
2023	FTFA235022	MGT, SPECIES, AQUATIC T&E
2024	FTFA245022	
2025	FTFA255022	
2026	FTFA265022	
2027	FTFA275022	
2023	FTFAOS1658C3	MGT, SPECIES, COASTAL DUNE
2024	FTFAOS1658C4	
2025	FTFAOS1658C5	
2026	FTFAOS1658C6	
2027	FTFAOS1658C7	
2023	FTFAOS1657C3	MGT, SPECIES, GULF STURGEON
2024	FTFAOS1657C4	

Table 10-2. Air Force Base Natural Resources project numbers and titles.

Fiscal Year	Project Number	Project Title
2025	FTFAOS1657C5	
2026	FTFAOS1657C6	
2027	FTFAOS1657C7	
2023	FTFA230603	MGT, SPECIES, INDIGO SNAKE
2024	FTFA240603	
2025	FTFA250603	
2026	FTFA260603	
2027	FTFA270603	
2023	FTFAOS1655C3	MGT, SPECIES, OKALOOSA DARTER
2024	FTFAOS1655C4	
2025	FTFAOS1655C5	
2026	FTFAOS1655C6	
2027	FTFAOS1655C7	
2023	FTFAOS1654C3	MGT, SPECIES, RCW
2024	FTFAOS1654C4	
2025	FTFAOS1654C5	
2026	FTFAOS1654C6	
2027	FTFAOS1654C7	
2023	FTFAOS1656C3	MGT, SPECIES, SEA TURTLES
2024	FTFAOS1656C4	
2025	FTFAOS1656C5	
2026	FTFAOS1656C6	
2027	FTFAOS1656C7	
2023	FTFA230603	MGT, SPECIES, GOPHER TORTOISE
2024	FTFA240603	
2025	FTFA250603	
2026	FTFA260603	
2027	FTFA270603	
2023	FTFA235084	MGT, WETLANDS / FLOODPLAIN
2024	FTFA245084	
2025	FTFA255084	
2026	FTFA265084	
2027	FTFA275084	
2023	FTFA231606	MONITOR, WETLANDS
2024	FTFA241606	
2025	FTFA251606	
2026	FTFA261606	
2027	FTFA271606	
2023	FTFA235049	SUPPLIES, CN
2024	FTFA245049	
2025	FTFA255049	
2026	FTFA265049	

Table 10-2. Air Force Base Natural Resources project numbers and titles.

Fiscal Year	Project Number	Project Title
2027	FTFA275049	
2023	FTFAOS0801C3	VEHICLE FUEL & MAINTENANCE, CN
2024	FTFAOS0801C4	
2025	FTFAOS0801C5	
2026	FTFAOS0801C6	
2027	FTFAOS0801C7	
2023	FTFA231818	VEHICLE LEASING, CN
2024	FTFA241818	
2025	FTFA251818	
2026	FTFA261818	
2027	FTFA271818	
2023	AFCEWF010923	EQ VEHICLE FUEL & MAINTENANCE, FIRE
2024	AFCEWF010924	
2025	AFCEWF010925	
2026	AFCEWF010926	
2027	AFCEWF010927	
2023	AFCEWF010723	EQUIPMENT PURCHASE / MAINTAIN, FIRE
2024	AFCEWF010724	
2025	AFCEWF010725	
2026	AFCEWF010726	
2027	AFCEWF010727	
2023	AFCE230105	MGT, WILDLAND FIRE
2024	AFCE240105	
2025	AFCE250105	
2026	AFCE260105	
2027	AFCE270105	

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11.1 Standard References (Applicable to all USAF installations)

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- Sikes Act
- eDASH Natural Resources Program Page
- Natural Resources Playbook
- DoDI 4715.03, *Natural Resources Conservation Program*
- AFI 32-1015, *Integrated Installation Planning*
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12.0 ACRONYMS

12.1 Standard Acronyms (Applicable to all USAF installations)

- eDASH Acronym Library
- Natural Resources Playbook – Acronym Section
- U.S. EPA Terms & Acronyms

12.2 Installation Acronyms

6RTB	6th Ranger Training Battalion
7 SFG(A)	7th Special Forces Group (Airborne)
96 CEG	96th Civil Engineer Group
96 CEG/CEIAI	96th Civil Engineer Group, Computer Support (Information System Flight)
96 CEG/CEIAR	96th Civil Engineer Group, Contract and Finance Management
96 CEG/CEIE	96th Civil Engineer Group, Environmental Management Branch
96 CEG/CEIEA	96th Civil Engineer Group, Environmental Management Branch, Environmental Assets (Cultural Resource Office, Environmental Analysis, Natural Resource Office)
96 CEG/CEIEC	96th Civil Engineer Group, Environmental Management Branch, Environmental Compliance (Pollution Prevention)
96 CEG/CEOIUE	96th Civil Engineer Group, Pest Management Shop
96 CEG/CEOUUP	96th Civil Engineer Group, Exterior Plumbing
96 OSS/OSPJ	96th Operations Support Squadron/Joint Training and Exercise Section
96 SFS	96th Security Forces Squadron
96 TW	96th Test Wing
96 TW/CC	96th Test Wing, Committee Chair (Installation Commander)
96 TW/FM	96th Test Wing, Comptroller Directorate
96 TW/HO	96th Test Wing, History Office
96 TW/JAV	96th Test Wing, Judge Advocate, Environmental Law Division
96 TW/PK	96th Test Wing, Contracting Directorate
96 TW/SE	96th Test Wing, Safety Office
96 TW/SEF	96th Test Wing, Flight Safety
96 TW/XPO	96th Test Wing/Range and Airspace Sustainment
796 CES/CEOHG	796th Civil Engineer Squadron, Ground Maintenance
AAC	Air Armament Center
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFMAN	Air Force Manual
AFPD	Air Force Policy Directive
AFSOC	Air Force Special Operations Command
AFWFB	Air Force Wildland Fire Branch
AICUZ	Air Installation Compatible Use Zone
AIEDD	Advanced Improvised Explosive Device Disposal
ATV	All-terrain Vehicle
BA	Biological Assessment

BASH	Bird/Wildlife Aircraft Strike Hazard
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
BO	Biological Opinion
BRAC	Base Realignment and Closure
CBA	Choctawhatchee Basin Alliance
CCA	Core Conservation Area
CEMML	Center for Environmental Management of Military Lands
CH	Critical Habitat
CLEP	Conservation Law Enforcement Program
CP	Component Plan
CRP	Comprehensive Range Plan
CSB	Cape San Blas
CSU	Colorado State University
CWA	Clean Water Act
CY	Calendar Year
CZMA	Coastal Zone Management Act
DASH	Deer Aircraft Strike Hazard
DoD	Department of Defense
DoDI	Department of Defense Instruction
DPS	Distinct Population Segment
DSS	Data Support System
EA	Environmental Assessments
EAFBI	Eglin Air Force Base Instruction
ECM	Ecological Conditions Model
EFES	Eglin Fire Emergency Services
EFH	Essential Fish Habitat
EGSP	Eglin GeoBase Strategic Plan
EGTTR	Eglin Gulf Test and Training Range
EIAP	Environmental Impact Analysis Process
EMR	Eglin Mainland Reservation
EMS	Environmental Management System
EO	Executive Order
EOD	Explosive Ordnance Disposal
ERP	Environmental Restoration Program
ERTT	Environmental Restrictions Tracking Tool
ESA	Endangered Species Act
ETTC	Eglin Test and Training Complex
°F	Fahrenheit (degrees)
F.A.C.	Florida Administrative Code
FCMP	Florida Coastal Management Program
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOA	Florida Disabled Outdoor Association

FDNR	Florida Department of Natural Resources
FGDC	Federal Geographic Data Committee
FISC	Florida Invasive Species Council
FMU	Fire Management Units
FNAI	Florida Natural Areas Inventory
FNST	Florida National Scenic Trail
FTA	Florida Trail Association
FWC	Florida Fish and Wildlife Conservation Commission
FWO	Fish and Wildlife Officer
FY	Fiscal Year
GCPEP	Gulf Coastal Plain Ecosystem Partnership
GDD	Average Annual Accumulated Growing Degree Days with Base Temperature of 50 °F
GIO	GeoIntegration Office
GIS	Geographic Information System
GNDA	General Negative Determination Agreement
GPS	Global Positioning System
HOTDAYS	Days with Temperature Greater than 90 ºF
IAW	In Accordance With
ICRMP	Integrated Cultural Resources Management Plan
IED	Improvised Explosive Device
IHA	Incidental Harassment Authorization
IMST	Installation Mission Sustainment Team
INRMP	Integrated Natural Resources Management Plan
INS	Invasive Non-Native Species
INSMP	Invasive Non-Native Species Management Program
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated pest management
IPMP	Installation Pest Management Plan
IST	Installation Support Team
JSF	Joint Strike Fighter
LUH	Light Utility Helicopter
LOA	Letter of Authorization
LRSOW	Long-range standoff weapons
MBA	Mountain Bike Area
MBTA	Migratory Bird Treaty Act
MEA	Management Emphasis Area
MIH	Mobility-impaired Hunt
MMPA	Marine Mammals Protection Act
MRTFB	Major Range and Test Facility Base
MS4	Municipal Separate Stormwater Sewer System Permit
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSL	Mean Sea Level
MU	Management Unit

MVP	Minimum Viable Population
NAF	Non-appropriated fund
NAVSCOLEOD	Navy Explosive Ordnance Disposal School
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NR	Natural Resources
NRCS	Natural Resource Conservation Service
NRM	Natural Resources Manager
NRS	Natural Resources Section
NWCG	National Wildland Fire Coordinating Group
NWFWMD	Northwest Florida Water Management District
OAC	Outdoor Activities Committee
ONA	Outstanding Natural Areas
ORM	Operational Risk Management
OSS	Operations Support Squadron
PAM	Public Access Map
PBG	Potential Breeding Group
PBO	Programmatic Biological Opinion
pH	Potential for Hydrogen
POC	Point of Contact
PRECIP	Annual Average Precipitation
RCP	Representative Concentration Pathway
RC3	Range Configuration Control Committee
RCW	Red-Cockaded Woodpecker
REA	Range Environmental Assessment
RFS	Reticulated Flatwoods Salamander
ROI	Region of Influence
RSOP	Range Safety and Operations Procedures
SBS	Significant Botanical Sites
SLR	Sea Level Rise
SNA	Significant Natural Area
SR	State Road
SRI	Santa Rosa Island
SS	Storm Surge
SZ	Surf Zone
TAVE	Annual Average Temperature
TMAX	Annual Average Maximum Temperature
TMIN	Annual Average Minimum Temperature
TNC	The Nature Conservancy
TRRCD	Three Rivers Resource Conservation and Development
TSI	Timber Stand Improvement
TTA	Tactical Training Areas

TW	Test Wing
T&C	Terms and Conditions
T&E	Threatened and Endangered
UEC	Unit Environmental Coordinator
UH	Utility Helicopter
U.S.	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDA WS	United States Department of Agriculture, Wildlife Services
USCG	United States Coast Guard
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USFWS-FR	United States Fish and Wildlife Service Fisheries Resources Program
USGS	United States Geological Survey
UXO	Unexploded Ordnance
WETDAYS	Annual Number of Days per Year with Precipitation > 2 Inches in a Day
WFMP	Wildland Fire Management Plan
WFPC	Wildland Fire Program Coordinator
WMA	Wildlife Management Area
WSM	Wildland Support Module
WWTP	Wastewater Treatment Plant

13.0 DEFINITIONS

13.1 Standard Definitions (Applicable to all USAF installations)

- Natural Resources Playbook – Definitions Section

13.2 Installation Definitions

- Active Clusters—A grouping of cavity trees currently being used by RCWs consisting of either a family group, a single male, breeding pair, or a breeding pair and helpers.
- Activity Fuels—Dead woody vegetative material generated by human activity. Generally logging slash pine tops and branches left on site after logging or thinning.
- Active Management—Management actions taken for an individual species such as species-specific population monitoring, specific habitat management, or other actions such as translocation.
- Active RCW Cavity—A completed cavity or start exhibiting fresh pine resin associated with cavity maintenance, cavity construction, or resin well excavation by RCWs.
- Active RCW Cavity Tree—Any tree containing one or more active cavities.
- Air Armament Center—The host military organization for Eglin AFB until 2012.
- Allopatric—Occurring in separate, isolated geographic areas.
- Anadromous—Fish that migrate up rivers from the sea to breed in fresh water.
- Black Line Policy—Standard operating procedure to secure and reinforce control line by burning out unburned fuel inside the line. Authorization and coordination with on-scene incident commander is required for tactical reasons before implementing any firing procedures.
- Brown Spot Needle Blight—Fungus (Scirrhia acicola) regarded as the most serious disease affecting longleaf pine.
- Captured Cluster—A cluster that does not support its own group of RCWs but contains active cavity trees in use or kept active by birds from a neighboring cluster.
- Center Commander—Highest military official in charge of Eglin AFB.
- Cluster (RCW)—The aggregation of cavity trees previously and currently used and defended by a group of RCWs, or this same aggregation of cavity trees and a 61-meter (200-foot) wide buffer of continuous forest. Here, the second definition is used. For management purposes, the minimum area encompassing the cluster is 4 hectares (10 acres). Use of the term cluster is preferred over colony because colony implies more than one nest (as in colonial breeder).
- Conservation Action Plan—A joint action plan between the Eglin NRS and an on or off base organization which help meet a conservation objective such as the recovery, downlisting, or delisting of an endangered species.
- Conservation Target—A subset of all occurring terrestrial and aquatic communities or species of conservation concern that, if protected, are assumed to conserve all elements of the conservation concern and a significant portion of biodiversity at a conservation area. Conservation targets are used as part of the site conservation planning process developed by TNC and recognized as an accepted method of biodiversity management.
- Conspecific—Belonging to the same species.

- Cooperative Breeding—A breeding system in which one or more adults assist a breeding pair in rearing of young. These extra adults, called helpers, delay their own dispersal and reproduction and are generally related to the offspring of the breeding pair.
- Coordinating Group—The NWCG is made up of the USDA Forest Group Service; four department of Interior Agencies (Bureau of Land Management, National Park Service, Bureau of Indian Affairs and the Fish, and Wildlife Service); state forestry agencies through the National Association of State Foresters; and most recently the Department of Defense. The purpose of the NWCG is to coordinate programs of the participating wildfire management agencies so as to avoid wasteful duplication and to provide a means of constructively working together. Its goal is to provide more effective execution of each agency's fire management program. The group provides a formalized system to agree upon standards on training, equipment, qualifications, and other operational functions.
- Ecological Association—Areas on Eglin AFB divided into ecological units based on similarities in soils, hydrology, plants, animals, etc.
- Ecological Integrity—The relative health of an ecosystem and its ability to withstand perturbation.
- Ecological Process—The actions or events linking organisms and their environment; such as predation, mutualism, successional development, nutrient cycling, carbon sequestration, primary productivity, fire cycles, hydrologic patterns, and decay.
- Flatwoods—Mesic pine communities of the Gulf and Atlantic coastal plains typically with an underlining hardpan or elevated water table.
- Fuel Break System—A series of modified strips or blocks tied together to form continuous strategically located fuel breaks around land units.
- G ranking—A classification system used to rank the global rarity of a species or subspecies. Rarity is on a scale of 1-5 with 1 being the most rare.
- Genetic Variability—A range of phenotypes for a particular character. Genetic variability arises initially by mutation and is maintained by sexual reproduction. Such variation is the raw material for natural selection to act upon, ensuring that the best-adapted variants are most likely to reproduce.
- Group of RCW—The social unit in RCWs, consisting of a breeding pair with one or more helpers, a breeding pair without helpers, or a solitary male.
- Growing Season Fire—The application of prescribed fire during the growing season. In northwest Florida, the growing season extends from approximately mid-March through September. The season varies from year to year, based on weather factors. Based on seasonal physiological function of plant communities, most plant species on site will be actively growing, budding, and leafing out.
- Hexazinone—The active ingredient in a number of commercial systemic herbicides specifically developed for the control of hardwoods.
- Instrument Sight Lines—A cleared or open line of sight occurring between a test instrument/s and an object which is necessary to track and monitor an object downrange.
- Jeopardy Opinion—A specific type of Biological Opinion (BO) produced by the USFWS as a result of a formal, interagency, Section 7 consultation which states that the proposed action is reasonably expected, directly or indirectly, to reduce appreciably the likelihood of both the

survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.

- Natural Sand Pine—Sand pine that has not been planted and is either in a natural state such as in Sand Pine Scrub or is encroaching into and displacing longleaf pine as a result of fire exclusion.
- Naval Stores—The original source of turpentine and rosin. The raw material, gum, is extracted from chipped faces on mature slash and longleaf pine. Primary distillation processing produces turpentine and rosin, which in-turn can be further processed to provide a wide range of products. The gum naval stores industry has been largely replaced by the production of modern synthetic materials.
- Non-growing Season Fire—The application of prescribed fire during approximately September through mid-March. Synonymous with "winter, cold season or dormant season" burns. Most plant species have completed the season's growth and are dormant or entering dormancy.
- Old Growth Characteristics—Multi-aged stands of longleaf pine that have experienced some anthropogenic disturbance yet still contain a significant number of individual old growth trees distributed throughout the stand.
- Old Growth Longleaf Pine—Trees greater than 150 years of age or of sufficient age to begin showing characteristics associated with advanced maturity such as the presence of red heart disease, and loss of apical dominance which produces a flattened crown structure.
- Old Growth Natural Areas—A stand of usually uneven aged trees that has not been significantly altered from its natural state by historic management practices. These areas contain numerous individual old growth longleaf pine at a density thought to represent the pre-Columbian landscape. These areas function as benchmarks for restoring Eglin AFB's longleaf pine ecosystem.
- Passive Management—Broad management activities such as prescribed fire or timber management practices that benefit a host of species and/or their habitats.
- PSD Machine—A plastic sphere dispenser is one type of apparatus used to conduct aerial prescribed burning.
- Pyrotechnic Devices—Training devices, simulators, and flares that have the capability to ignite wildfires when employed by mission activity in a wildland area.
- RCW Cavity Management—A management protocol that ensures that at least three suitable completed cavities are available in a RCW cluster.
- Recovery Unit—One of a set of geographical areas, delineated according to the ecoregions that likely represent broad-scale geographic and genetic variation in RCWs. Viable populations in each recover unit, to the fullest extent that a viable habitat allows, are considered essential to the recovery of the species.
- Recruitment Cluster—A cluster of artificial cavities in suitable nesting habitat, located close to existing groups.
- Red Heart Disease—A fungal infection caused by Phellinus pini typically occurring in older pines causing the interior heart wood to decay and rot making it suitable for RCW cavity excavation.
- Roller Drum Chopping—A technique used in reforestation and land clearing which use a large roller with attached cutting blades pulled behind a tracked or wheeled tractor to reduce the stature of small shrubs and woody vegetation.

- Sandhills—Xeric and sub-xeric longleaf pine communities on deep sandy soils. Also the ecoregion encompassing the fall-line sandhills communities between the mid- and south-Atlantic coastal plains and Piedmont.
- Security Blinds—Manmade objects or vegetation which obstructs the viewing of a classified or sensitive object or area for the purposes of maintaining security.
- Sympatric—Occupying the same or overlapping geographic areas without interbreeding.
- Temporal—Pertaining to, concerned with, or limited by time.
- Translocation—The artificial movement of wild organisms between or within populations to achieve management objectives.

14.0 APPENDICES

14.1 Appendix A. Annotated Summary of Key Legislation Related to Design and Implementation of the INRMP.

Appendix A. Annotated Summary of Key Legislation Related to Design and Implementation of the INRMP.

Federal Public Laws and Executive Orders	
National Defense Authorization Act of 1989, Public Law (P.L.) 101-189; Volunteer Partnership Cost-Share Program	Amends two Acts and establishes volunteer and partnership programs for natural and cultural resources management on DoD lands.
Defense Appropriations Act of 1991, P.L. 101-511; Legacy Resource Management Program	Establishes the "Legacy Resource Management Program" for natural and cultural resources. Program emphasis is on inventory and stewardship responsibilities of biological, geophysical, cultural, and historic resources on DoD lands, including restoration of degraded or altered habitats.
Executive Order (EO) 11514, Protection and Enhancement of Environmental Quality	Federal agencies shall initiate measures needed to direct their policies, plans, and programs to meet national environmental goals. They shall monitor, evaluate, and control agency activities to protect and enhance the quality of the environment.
EO 11593, Protection and Enhancement of the Cultural Environment	All Federal agencies are required to locate, identify, and record all cultural resources. Cultural resources include sites of archaeological, historical, or architectural significance.
EO 11987, Exotic Organisms	Agencies shall restrict the introduction of exotic species into the natural ecosystems on lands and waters which they administer.
EO 11988, Floodplain Management	Provides direction regarding actions of Federal agencies in floodplains, and requires permits from state, territory and Federal review agencies for any construction within a 100-year floodplain and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for acquiring, managing and disposing of Federal lands and facilities.
EO 11989, Off-Road vehicles on Public Lands	Installations permitting off-road vehicles to designate and mark specific areas/trails to minimize damage and conflicts, publish information including maps, and monitor the effects of their use. Installations may close areas if adverse effects on natural, cultural, or historic resources are observed.
EO 11990, Protection of Wetlands	Requires Federal agencies to avoid undertaking or providing assistance for new construction in wetlands unless there is no practicable alternative, and all practicable measures to minimize harm to wetlands have been implemented and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal

Appendix A. Annotated Summary of Key Legislation Related to Design and Implementation of the INRMP.

	activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.
EO 12088, Federal Compliance With Pollution Control Standards	This EO delegates responsibility to the head of each executive agency for ensuring all necessary actions are taken for the prevention, control, and abatement of environmental pollution. This order gives the U.S. Environmental Protection Agency (US EPA) authority to conduct reviews and inspections to monitor Federal facility compliance with pollution control standards.
EO 12898, Environmental Justice	This EO requires certain federal agencies, including the DoD, to the greatest extent practicable permitted by law, to make environmental justice part of their missions by identifying and addressing disproportionately high and adverse health or environmental effects on minority and low-income populations.
EO 13112, Invasive Species	To prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds	The U.S. Fish and Wildlife Service (USFWS) has the responsibility to administer, oversee, and enforce the conservation provisions of the Migratory Bird Treaty Act, which includes responsibility for population management (e.g., monitoring), habitat protection (e.g., acquisition, enhancement, and modification), international coordination, and regulations development and enforcement.
United States Code	
Animal Damage Control Act (7 U.S.C. § 426-426b, 47 Stat. 1468)	Provides authority to the Secretary of Agriculture for investigation and control of mammalian predators, rodents, and birds. DoD installations may enter into cooperative agreements to conduct animal control projects.
Bald and Golden Eagle Protection Act of 1940, as amended; 16 U.S.C. 668-668c	This law provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.
Clean Air Act, (42 U.S.C. § 7401– 7671q, July 14, 1955, as amended)	This Act, as amended, is known as the Clean Air Act of 1970. The amendments made in 1970 established the core of the clean air program. The primary objective is to establish Federal standards for air pollutants. It is designed to improve air quality in areas of the country which do not meet Federal standards and to prevent significant deterioration in areas where air quality exceeds those standards.
Comprehensive Environmental Response,	Authorizes and administers a program to assess damage, respond to releases of hazardous substances, fund cleanup, establish clean-up

Appendix A. Annotated Summary of Key Legislation Related to Design and Implementation of the INRMP.

Compensation, and Liability Act of 1980 (Superfund) (26 U.S.C. § 4611–4682, P.L. 96-510, 94 Stat. 2797), as amended	standards, assign liability, and other efforts to address environmental contaminants. Installation Restoration Program guides cleanups at DoD installations.
Endangered Species Act (ESA) of 1973, as amended; P.L. 93-205, 16 U.S.C. § 1531 et seq.	Protects threatened, endangered, and candidate species of fish, wildlife, and plants and their designated critical habitats. Under this law, no Federal action is allowed to jeopardize the continued existence of an endangered or threatened species. The ESA requires consultation with the USFWS and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service, and the preparation of a biological evaluation or a biological assessment may be required when such species are present in an area affected by government activities.
Federal Aid in Wildlife Restoration Act of 1937 (16 U.S.C. § 669–669i; 50 Stat. 917) (Pittman-Robertson Act)	Provides Federal aid to states and territories for management and restoration of wildlife. Fund derives from sports tax on arms and ammunition. Projects include acquisition of wildlife habitat, wildlife research surveys, development of access facilities, and hunter education.
Federal Environmental Pesticide Act of 1972	Requires installations to ensure pesticides are used only in accordance with their label registrations and restricted-use pesticides are applied only by certified applicators.
Federal Land Use Policy and Management Act, 43 U.S.C. § 1701–1782	Requires management of public lands to protect the quality of scientific, scenic, historical, ecological, environmental, and archaeological resources and values; as well as to preserve and protect certain lands in their natural condition for fish and wildlife habitat. This Act also requires consideration of commodity production such as timbering.
Federal Noxious Weed Act of 1974, 7 U.S.C. § 2801–2814	The Act provides for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health.
Federal Water Pollution Control Act (Clean Water Act [CWA]), 33 U.S.C. §1251–1387	The CWA is a comprehensive statute aimed at restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. Primary authority for the implementation and enforcement rests with the U.S. EPA.
Fish and Wildlife Conservation Act (16 U.S.C. § 2901–2911; 94 Stat. 1322, PL 96-366)	Installations encouraged to use their authority to conserve and promote conservation of nongame fish and wildlife in their habitats.
Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)	Directs installations to consult with the USFWS, or state or territorial agencies to ascertain means to protect fish and wildlife resources related to actions resulting in the control or structural modification of any natural stream or body of water. Includes provisions for mitigation and reporting.

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Lacey Act of 1900 (16 U.S.C. § 701, 702, 32 Stat. 187, 32 Stat. 285)	Prohibits the importation of wild animals or birds or parts thereof, taken, possessed, or exported in violation of the laws of the country or territory of origin. Provides enforcement and penalties for violation of wildlife related Acts or regulations.
Leases: Non-excess Property of Military Departments, 10 U.S.C. § 2667, as amended	Authorizes DoD to lease to commercial enterprises Federal land not currently needed for public use. Covers agricultural outleasing program.
Migratory Bird Treaty Act 16 U.S.C. § 703–712	The Act implements various treaties for the protection of migratory birds. Under the Act, taking, killing, or possessing migratory birds is unlawful without a valid permit.
National Environmental Policy Act of 1969 (NEPA), as amended; P.L. 91-190, 42 U.S.C. § 4321 et seq.	Requires Federal agencies to use a systematic approach when assessing environmental impacts of government activities. Establishes the use of environmental impact statements. NEPA proposes an interdisciplinary approach in a decision-making process designed to identify unacceptable or unnecessary impacts on the environment. The Council of Environmental Quality (CEQ) created Regulations for Implementing the National Environmental Policy Act [40 Code of Federal Regulations (CFR) Parts 1500– 1508], which provide regulations applicable to and binding on all Federal agencies for implementing the procedural provisions of NEPA, as amended.
National Historic Preservation Act, 16 U.S.C. § 470 et seq.	Requires Federal agencies to take account of the effect of any federally assisted undertaking or licensing on any district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP). Provides for the nomination, identification (through listing on the NRHP), and protection of historical and cultural properties of significance.
National Trails Systems Act (16 U.S.C. § 1241–1249)	Provides for the establishment of recreation and scenic trails.
National Wildlife Refuge Acts	Provides for establishment of National Wildlife Refuges through purchase, land transfer, donation, cooperative agreements, and other means.
National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd–668ee)	Provides guidelines and instructions for the administration of Wildlife Refuges and other conservation areas.
Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001–13; 104 Stat. 3042), as amended	Established requirements for the treatment of Native American human remains and sacred or cultural objects found on Federal lands. Includes requirements on inventory, and notification.
Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.)	Makes it unlawful for the USAF to conduct any work or activity in navigable waters of the United States without a Federal Permit. Installations should coordinate with the U.S. Army Corps of Engineers (USACE) to obtain permits for the discharge of refuse affecting

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	navigable waters under National Pollutant Discharge Elimination System and should coordinate with the USFWS to review effects on fish and wildlife of work and activities to be undertaken as permitted by the USACE.
Sale of certain interests in land, 10 U.S.C. § 2665	Authorizes sale of forest products and reimbursement of the costs of management of forest resources.
Soil and Water Conservation Act (16 U.S.C. § 2001, P.L. 95-193)	Installations shall coordinate with the Secretary of Agriculture to appraise, on a continual basis, soil/water-related resources. Installations will develop and update a program for furthering the conservation, protection, and enhancement of these resources consistent with other Federal and local programs.
Sikes Act (16 U.S.C. § 670a–670l, 74 Stat. 1052), as amended	Provides for the cooperation of DoD, the Departments of the Interior (USFWS), and the State Fish and Game Department in planning, developing, and maintaining fish and wildlife resources on a military installation. Requires development of an Integrated Natural Resources Management Plan and public access to natural resources and allows collection of nominal hunting and fishing fees. NOTE: AFI 32-7064 sec 3.9. Staffing. As defined in Department of Defense Instruction (DoDI) 4715.03, use professionally trained natural resources management personnel with a degree in the natural sciences to develop and implement the installation INRMP. (T-0). 3.9.1. Outsourcing Natural Resources Management. As stipulated in the Sikes Act, 16 U.S.C. § 670 et. seq., the Office of Management and Budget Circular No. A-76, Performance of Commercial Activities, 4 August 4 1983 (Revised 29 May 2003) does not apply to the development, implementation and enforcement of INRMPs. Activities that require the exercise of discretion in making decisions regarding the management and disposition of government owned natural resources are inherently governmental. When it is not practicable to use DoD personnel to perform inherently governmental natural resources management duties, obtain these services from federal agencies having responsibilities for the conservation and management of natural resources.
DoD Policy, Directives, and Instructions	
DoD Instruction 4150.07 *DoD Pest Management Program* dated 29 May 2008	Implements policy, assigns responsibilities, and prescribes procedures for the DoD Integrated Pest Management Program.
DoD Instruction 4715.1, *Environmental Security*	Establishes policy for protecting, preserving, and (when required) restoring and enhancing the quality of the environment. This instruction also ensures environmental factors are integrated into DoD decision-making processes that could impact the environment and are given appropriate consideration along with other relevant factors.

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DoD Instruction (DODI) 4715.03, Natural Resources Conservation Program	Implements policy, assigns responsibility, and prescribes procedures under DoDI 4715.1 for the integrated management of natural and cultural resources on property under DoD control.
OSD Policy Memorandum, 17 May 2005—Implementation of Sikes Act Improvement Amendments: Supplemental Guidance Concerning Leased Lands	Provides supplemental guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DoD. The guidance covers lands occupied by tenants or lessees or being used by others pursuant to a permit, license, right of way, or any other form of permission. INRMPs must address the resource management on all lands for which the subject installation has real property accountability, including leased lands. Installation commanders may require tenants to accept responsibility for performing appropriate natural resource management actions as a condition of their occupancy or use, but this does not preclude the requirement to address the natural resource management needs of these lands in the installation INRMP.
OSD Policy Memorandum, 1 November 2004—Implementation of Sikes Act Improvement Act Amendments: Supplemental Guidance Concerning INRMP Reviews	Emphasizes implementing and improving the overall INRMP coordination process. Provides policy on scope of INRMP review, and public comment on INRMP review.
OSD Policy Memorandum, 10 October 2002—Implementation of Sikes Act Improvement Act: Updated Guidance	Provides guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DoD and replaces the 21 September 1998 guidance Implementation of the Sikes Act Improvement Amendments. Emphasizes implementing and improving the overall INRMP coordination process and focuses on coordinating with stakeholders, reporting requirements and metrics, budgeting for INRMP projects, using the INRMP as a substitute for critical habitat designation, supporting military training and testing needs, and facilitating the INRMP review process.
USAF Instructions and Directives	
32 CFR Part 989, as amended, and AFI 32-7061, Environmental Impact Analysis Process (EIAP)	Provides guidance and responsibilities in the EIAP for implementing INRMPs. Implementation of an INRMP constitutes a major federal action and therefore is subject to evaluation through an Environmental Assessment or an Environmental Impact Statement.
AFI 32-1015, Integrated Installation Planning	This publication establishes a comprehensive and integrated planning framework for development/redevelopment of Air Force installations.
AFMAN 32-7003, Environmental Conservation	Implements Air Force Policy Directive (AFPD) 32-70, *Environmental Quality;* DoDI 4715.03, *Natural Resources Conservation Program*; and DoDI 7310.5, *Accounting for Sale of Forest Products*. It explains how to manage natural resources on USAF property in compliance with Federal, state, territorial, and local standards.
AFMAN 32-7003, Environmental Conservation	This Manual implements AFPD 32-70 and DoDI 4710.1, *Archaeological and Historic Resources Management.* It explains how

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	to manage cultural resources on USAF property in compliance with Federal, state, territorial, and local standards.
AFI 32-10112 Installation Geospatial Information and Services (IGI&S)	This instruction implements DoDI 8130.01, Installation Geospatial Information and Services (IGI&S) by identifying the requirements to implement and maintain an Air Force Installation Geospatial Information and Services program and AFPD 32-10 Installations and Facilities.
AFPD 32-70, Environmental Quality	Outlines the USAF mission to achieve and maintain environmental quality on all USAF lands by cleaning up environmental damage resulting from past activities, meeting all environmental standards applicable to present operations, planning its future activities to minimize environmental impacts, managing responsibly the irreplaceable natural and cultural resources it holds in public trust and eliminating pollution from its activities wherever possible. AFPD 32-70 also establishes policies to carry out these objectives.
Policy Memo for Implementation of Sikes Act Improvement Amendments, Headquarters (HQ) USAF Environmental Office on January 29, 1999	Outlines the USAF interpretation and explanation of the Sikes Act and Improvement Act of 1997.

14.2 Appendix B. Environmental Guidebooks

Located in File Folder: Appendices

Or Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\Guidebooks

14.3 Appendix C. Federal Agency Coastal Zone Management Act General Negative Determination

FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT
GENERAL NEGATIVE DETERMINATION

This document provides the State of Florida with the U.S. Air Force's General Negative Determination under Section 307 of the Coastal Zone Management Act (CZMA), 16 United States Code (U.S.C.) § 1456, and 15 Code of Federal Regulations (C.F.R.) Part 930 Subpart C. In accordance with Section 307 of the Coastal Zone Management Act and 15 C.F.R. 930 subpart C, Federal agency activities affecting a land or water use or natural resource of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the state's coastal management program. The Florida Department of Environmental Protection (FDEP) administers the Florida Coastal Management Program under the authority of the Florida Coastal Management Act (Chapter 380, F.S., Part II).

I. TERMS:

For purposes of this document, "activities of significance to the state" are activities that involve new ground disturbance (i.e., construction activities that disturb land greater than two acres), and/or potential impacts to protected species[1], historic/archaeological resources, state roads, state-owned properties, water resources, wetlands, or soils.

The seaward boundaries of the State of Florida coastal zone are defined in accordance with Section 304(1) of the CZMA, the Submerged Lands Act (43 U.S.C. 1301, et. seq.) and *United States v. Louisiana*, 364 U.S. 502 (1960), as three miles from the coast line of the state into the Atlantic Ocean and approximately ten statute miles from the coast line into the Gulf of Mexico.

The landward boundaries of the State of Florida coastal zone are defined by the state, in accordance with Section 306(d)(2)(A) of the CZMA, as the entire State of Florida, excluding only federally owned property.

II. ACTIVITIES WITH NO EFFECT ON THE COASTAL ZONE:

It is hereby agreed as follows: After review of the Florida Coastal Management Program (FCMP) and its enforceable policies, the Florida Department of Environmental Protection (FDEP), the Florida Fish and Wildlife Conservation Commission (FWC), the Florida Department of State/State Historic Preservation Officer (SHPO) and Eglin Air Force Base, Florida (Eglin or Air Force) hereby determine that the following activities will not have an effect on the State of Florida coastal zone or its resources:

[1] "Protected species" are fish and wildlife species designated as threatened, endangered or candidate species by the United States Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS); protected by 68A-16.002, Florida Administrative Code; protected by 379.2431, Florida Statutes; listed as state threatened or species of special concern by the Florida Fish and Wildlife Conservation Commission (FWC) pursuant to Chapter 68A-27, Florida Administrative Code; or that were listed pursuant to Chapter 68A-27, Florida Administrative Code, as of November 8, 2010, but that have subsequently been removed from that rule and are managed pursuant to an approved FWC management plan.

A. Construction Activities:

(1) Performing interior and exterior construction within the 5-foot line of a building without changing the land use or the use of the existing building.

(2) Repairing and replacing real-property-installed equipment.

(3) Routine facility maintenance and repair that does not involve disturbing significant quantities of hazardous materials (such as asbestos). Disposal of all hazardous materials must comply with the requirements of Chapters 376 (Pollutant Discharge Prevention and Removal) and 403 (Environmental Control), Florida Statutes (F.S.), and applicable Florida Administrative Code (F.A.C.) rules. [Note: FDEP must be notified, through 96 CEG/CEIEC (96th Civil Engineer Group, Environmental Management Branch, Compliance Office), as outlined in Chapter 62-257, F.A.C., Asbestos Program, of renovation and demolition activities that involve the wrecking or taking out of any load-supporting structural member and/or removal of a defined amount of asbestos-containing material.]

(4) Installing, on previously developed land, equipment that does not substantially alter land use (i.e., land use of more than two acres). This includes out-grants to private lessees for similar construction.

(5) Construction of buildings located on Eglin property, when such construction would not be an activity of significance to the state as defined in Section I. [Note: Any increase in impervious surface area greater than one acre in size will require a National Pollutant Discharge Elimination System (NPDES) permit from the FDEP under Chapter 62-621, F.A.C. The project may also require an Environmental Resource Permit (ERP) from the Northwest Florida Water Management District (NWFWMD) under Chapter 62-330, F.A.C. 96 CEG/CEIEC will comply with all permitting requirements of Chapters 62-330 and 62-621, F.A.C.]

(6) Demolition of any existing building on Eglin property previously evaluated and found ineligible for listing in the National Register of Historic Places (NRHP). If buildings contain any hazardous materials, proper handling techniques referred to in subsection II.A.(3) of this General Negative Determination shall apply.

(7) Demolition of any buildings listed as eligible for registry into the NRHP, provided that the Air Force consults with the SHPO in accordance with the National Historic Preservation Act (NHPA) and the SHPO does not object. Copies of such consultations shall be available to FDEP upon request.

(8) Construction of a Fresh Water Deluge Rinse Capability ("Bird Bath") Facility that utilizes only fresh water for rinsing aircraft of salt water. Wastewater discharge must comply with the requirements of Chapters 373 (Water Resources) and 403 (Environmental Control), F.S., and applicable F.A.C. rules.

(9) Installing or modifying airfield operational equipment (such as runway visual range equipment, visual glide path systems, and remote transmitter or receiver facilities) on airfield property and usually accessible only to maintenance personnel.

(10) Installing, operating, modifying, and routinely repairing and replacing utility and communications systems, data processing cable and similar electronic equipment that use existing rights-of-way, easements, distribution systems, or facilities.

(11) Designation and construction of new utility easements in locations where historically such easements have existed.

(12) Installation, maintenance and abandonment of water wells and onsite sewage treatment and disposal systems, provided that the Air Force complies with all applicable state procedures, regulations and permit processes. The 96 CEG/CEIEC Water Quality Program Office will coordinate all permits through the FDEP and Florida Department of Health in accordance with Chapters 373 (Water Resources), 381 (Public Health: General Provisions) and 403 (Environmental Control), F.S., and applicable F.A.C. rules.

(13) Construction of gazebos and pavilions located on Eglin's property that would not be an activity of significance to the state as defined in Section I.

(14) Removal of vegetation or clearing of land to construct new facilities that would not involve degradation to surrounding ecological associations, impacts to protected species habitats, or be an activity of significance to the state as defined in Section I.

(15) Removal of vegetation or clearing of land for the maintenance of utilities corridors, installation/maintenance of security fences, or provide "line of sight" for observational towers that would not involve degradation to surrounding ecological associations, impacts to protected species habitats, or be an activity of significance to the state as defined in Section I. Adequate implementation of erosion control Best Management Practices is implied.

(16) Removal and/or installation of aboveground or underground storage tanks on Eglin property in accordance with applicable federal and state laws.

(17) Construction of communications towers (i.e., cellular towers or antennas), provided that the Air Force complies with the Migratory Bird Treaty Act (MBTA) regulations and applicable federal and state laws and provided the construction would not be an activity of significance to the state as defined in Section I.

(18) Construction of water towers, provided that the Air Force complies with all applicable state procedures, regulations and permit processes. The 96 CEG/CEIEC Water Quality Program Office will coordinate all permits through the FDEP in accordance with applicable Florida Statutes and F.A.C. rules.

(19) Erosion control projects, provided that the Air Force complies with all applicable state procedures, regulations and permit processes. [Note: Projects will require an ERP from the NWFWMD pursuant to Chapter 62-330, F.A.C., and may require a NPDES

permit from the FDEP pursuant to Chapter 62-621, F.A.C. 96 CEG/CEIEC will ensure compliance with all permitting requirements of Chapters 62-330 and 62-621, F.A.C.]. Erosion control projects are addressed in Eglin's Integrated Natural Resource Management Plan (INRMP) (see item [21]).

(20) Range road maintenance, repair, and paving improvements, provided that the Air Force complies with all applicable state procedures, regulations and permit processes and the project would not be an activity of significance to the state as defined in Section I. [Note: Any increase in impervious surface area greater than one acre in size will require a NPDES permit from the FDEP under Chapter 62-621, F.A.C. The project may also require an ERP from the NWFWMD under Chapter 62-330, F.A.C. 96 CEG/CEIEC will ensure compliance with all permitting requirements of Chapters 62-330 and 62-621, F.A.C.].

(21) Activities (i.e. erosion control projects, endangered species habitat restoration, tree removal, and activities associated with Special Rule 4[d]) conducted in accordance with Eglin's INRMP, provided that the Air Force complies with all applicable state procedures, regulations and permit processes and the project would not be an activity of significance to the state as defined in Section I.

(22) Activities conducted in accordance with Eglin's Integrated Cultural Resource Management Plan, provided that the Air Force complies with all applicable state procedures, regulations and permit processes and the project would not be an activity of significance to the state as defined in Section I.

B. Operational Activities:

(1) Flying activities that comply with the federal aviation regulations, are dispersed over a wide area, and do not pass near the same ground points more than once a day.

(2) Adopting airfield approach, departure, and en route procedures that do not route air traffic over noise-sensitive areas, including residential neighborhoods or cultural, historic, and outdoor recreational areas.

(3) Supersonic flying operations over land and above 30,000 feet Mean Sea Level (MSL), or over water and above 10,000 feet MSL and more than 15 nautical miles from land.

(4) Supersonic flying operations over Eglin's Main Base that do not create a sonic boom footprint that extends beyond the boundaries of the reservation(5) Normal or routine basic and applied scientific research confined to the laboratory and in compliance with all applicable safety, environmental, and natural resource conservation laws.

(6) Transportation of hazardous materials and waste in accordance with applicable federal, state, interstate, and local laws.

(7) Emergency handling and transporting of small quantities of chemical surety material or suspected chemical surety material, whether or not classified as hazardous or toxic waste, from a discovery site to a permitted storage, treatment, or disposal facility.

(8) Immediate responses to the release or discharge of oil or hazardous materials in accordance with an approved Spill Prevention and Response Plan or Spill Contingency Plan or that are otherwise consistent with the requirements of the National Contingency Plan. Long-term cleanup and remediation activities should be evaluated separately.

(9) Undertaking specific investigatory activities to support remedial action activities for purposes of cleanup of hazardous spillage or waste sites or contaminated groundwater or soil. These activities include soil borings and sampling, installation, and operation of test or monitoring wells. This applies to studies that assist in determining final cleanup actions when they are conducted in accordance with interagency agreements, administrative orders, or work plans previously agreed to by EPA or state regulators.

(10) Operational activities that have the potential to affect protected species, provided that the Air Force consults with the USFWS or the NMFS in accordance with the MMPA or Section 7 of the ESA, and provided that the Air Force consults with the FWC and the FWC does not object to the activity. This agreement is not intended to require such consultation, nor is it intended to waive any right FWC may have to require such consultation. For purposes of this document, should the Air Force fail to consult with FWC or should FWC object to the activity, such activity shall be addressed in accordance with Section III below. All potential impacts to any protected species will be assessed through the consultation process with USFWS or NMFS. Copies of such consultations shall be available to FDEP upon request. Protected species will be managed in accordance with Eglin's INRMP.

(11) Operational activities that have the potential to affect a historic resource listed as eligible for registry into the NRHP, provided that the Air Force consults with the SHPO in accordance with the NHPA and the SHPO does not object. Copies of such consultations shall be available to FDEP upon request.

III. OTHER ACTIVITIES:

Any activity not listed in Sections I and II will be evaluated for consistency on an individual basis in accordance with the following process and procedures:

A. The Negative Determination will be prepared in accordance with 15 C.F.R. 930.35. FDEP will review the proposed project within seven working days and either:

(1) Issue an e-mail response back to Eglin stating concurrence with the Negative Determination;

(2) Request additional information to make a decision; or

(3) Notify Eglin that FDEP disagrees with Eglin's Negative Determination. Eglin will then either prepare a Consistency Determination in accordance with 15 C.F.R. 930.39 or consider alternative measures (if they exist) which, with the agreement of FDEP, would make a Negative Determination appropriate.

B. If Eglin determines that the project may affect any land, water, or natural resource in the state's coastal zone, then Eglin will prepare a Consistency Determination in accordance with 15 C.F.R. 930.39. The purpose of the Consistency Determination is to ensure that federal activities are consistent, to the maximum extent practicable, with the enforceable policies of the federally approved FCMP.

(1) For these purposes, all species defined as protected according to Footnote 1 to Section I, are coastal resources, and any direct, indirect or cumulative effects on such species shall subject the activity to a Consistency Determination.

(2) FDEP will have 60 days to review the Consistency Determination and respond in accordance with 15 C.F.R. 930.41 or object in accordance with 15 C.F.R. 930.43. If the parties cannot come to agreement on the sufficiency of the Consistency Determination, they may also seek dispute resolution under 15 C.F.R. 930.44.

Eglin, FDEP, SHPO and FWC will review this General Negative Determination once every five years to revise and update if deemed necessary.

IV. NOTICE PROVISIONS:

All notices required or permitted by this Agreement shall be in writing and shall be made via email to the parties' representatives whose names and addresses are listed below. Notices by registered or certified mail shall be deemed received on the delivery date indicated by the U.S. Postal Service on the return receipt.

FDEP: Mr. Chris Stahl
Florida State Clearinghouse
Florida Department of Environmental Protection
3800 Commonwealth Blvd., MS 47
Tallahassee, FL 32399-2400
Telephone: (850) 717-9076
E-Mail: Chris.Stahl@dep.state.fl.us

FWC: Mr. Eric Sutton, Executive Director
Florida Fish and Wildlife Conservation Commission
620 South Meridian Street, M.S. 5B5
Tallahassee, FL 32399-1600
Telephone: (850) 487-3796
E-Mail: eric.sutton@MyFWC.com

SHPO: Timothy A. Parsons, Ph.D., Director
Division of Historical Resources
Florida Department of State
500 South Bronough Street
Tallahassee, FL 32399-0250
Telephone: (850) 245-6300
E-Mail: timothy.parsons@dos.myflorida.com

EGLIN: Mr. John A. Averett, NH-03
Attorney Advisor, 96 TW/JAV (AFMC)
501 W. Van Matre Avenue, Suite 1
Eglin AFB, FL 32542
Telephone: (850) 882-8041
E-Mail: john.averett@us.af.mil

Kevin J. Osborne, Colonel, USAF
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501 DeLeon Street, Suite 100
Eglin AFB, FL 32542
Telephone: (850) 882-2876
E-Mail: kevin.osborne@us.af.mil

15.0 ASSOCIATED PLANS

15.1 Tab 1—Wildland Fire Management (WFM) Plan

Located in File Folder: Appendices

Or Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\Wildland Fire Management Plan.

15.2 Tab 2—Bird/Wildlife Aircraft Strike Hazard (BASH) Plan

Located in File Folder: ASSOCIATED PLANS

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15.3 Tab 3—Golf Environmental Management (GEM) Plan

Located in File Folder: ASSOCIATED PLANS

Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\Associated Plans

15.4 Tab 4—Integrated Cultural Resources Management Plan (ICRMP)

Located in File Folder: ASSOCIATED PLANS

Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\Associated Plans

15.5 Tab 5—Integrated Pest Management Plan (IPMP)

Located in File Folder: ASSOCIATED PLANS

Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\Associated Plan

15.6 Tab 6—Forest Management Component Plan

Located in File Folder: Appendices

Or Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\Forest Management Plan

15.7 Tab 7—Outdoor Recreation Component Plan

Located in File Folder: Appendices

Or Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\OutdoorRec Plan

15.8 Tab 8—Threatened and Endangered Species Component Plan

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15.9 Tab 9—Ecological Monitoring Component Plan

Located in File Folder: Appendices

Or Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\Ecological Monitoring Plan

15.10 Tab 10—Erosion Control Component Plan

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15.11 Tab 11—Invasive Non-Native Wildlife, Feral Animals, and Nuisance Native Wildlife Control Plan

Located in File Folder: Appendices

Or Local copy at: F:\Prj\INRMP\Component Plans 2017 Working Copies\Invasive Species Plan